DOCUMENT RESUME

ED 250 066 PS 014 570

AUTHOR Sani, Ruta Bulderis
TITLE Literature Sources in Elementary and Early Childhood Education.
PUB DATE 84
NOTE 287p.; Ph.D. Thesis, University of Illinois.
PUB TYPE Dissertations/Theses - Doctoral Dissertations (041) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC12 Plus Postage.
DESCRIPTORS *Citations (References); *Content Analysis; Databases; *Early Childhood Education; *Educational Resources; *Elementary Education; *Information Sources; Periodicals
IDENTIFIERS *Bibliometrics; *ERIC Clearinghouse on Elementary Early Child Educ; Literature Dispersion; Scientific Disciplines

ABSTRACT

This bibliometric study assesses literature sources of elementary and early childhood education documents by examining, over a 30-month period, documents entered into the Educational Resources Information Center (ERIC) data base by the ERIC Clearinghouse on Elementary and Early Childhood Education. The document collection is sorted into three groups according to the orientation of the intended audience (research-, interpretation-, and practice-oriented documents) through the use of publication type codes. One hundred ERIC documents from both the "Current Index to Journals in Education" (CIJE) and the "Resources in Education" (RIE) subfiles of the ERIC data base were randomly selected from each of the three document groups. In order to test two hypotheses, that: (1) research-oriented publications would cite more literature, more recent literature, and draw more heavily on the literature of other disciplines than either interpretation- or practice-oriented publications; and (2) interpretation-oriented publications would cite more literature, more recent literature, and draw more heavily on literature from other disciplines than practice-oriented literature, the mean number of references per document was determined. Citation analyses were conducted to find median citation age and literature dispersion among 28 identified disciplines. Findings indicate that: (1) research-oriented publications cite less literature than interpretation-oriented documents and more than practice-oriented publications, cite the oldest literature, and draw more heavily on the literature of other disciplines than either practice- or interpretation-oriented documents; and (2) interpretation-oriented documents cite more literature and draw more heavily upon the literature of other disciplines than practice oriented documents; however, interpretation-oriented documents do not cite more recent literature. (RH)

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LITERATURE SOURCES IN ELEMENTARY AND EARLY CHILDHOOD EDUCATION

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THESIS

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Education
in the Graduate College of the
University of Illinois at Urbana-Champaign, 1984

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Urbana, Illinois

LITERATURE SOURCES IN ELEMENTARY AND EARLY CHILDHOOD EDUCATION

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University of Illinois at Urbana-Champaign, 1984
(Prof. F. Wilfrid Lancaster)

This bibliometric study assesses literature sources of elementary and early childhood education documents sampled from a 30-month input to the ERIC database by the ERIC Clearinghouse on Elementary and Early Childhood Education. The identified ERIC document population is grouped according to intended audience orientations through the use of pubtypes (publication type codes assigned to ERIC documents during the indexing process). The three orientations identified are research, interpretation, and practice. One hundred ERIC documents are randomly selected from each of the three document groups. Both the CIJE and RIE subfiles of the ERIC database contribute proportionately to the sample of research-, interpretation-, and practice-oriented documents. The references included in each selected ERIC document are counted and grouped by orientation to assess the mean number of references per document in the orientations. One thousand references are randomly selected from each orientation while maintaining a proportionate distribution between CIJE and RIE document references. Subsequent citation analyses were conducted to find median citation age and literature dispersion among 28 identified disciplines. The study also discusses disciplines that serve as major literature sources for each orientation and provides lists of journal titles that can be considered core journals for these same orientations.

ACKNOWLEDGMENTS

The author wishes to express her gratitude to Profs. F. Wilfrid Lancaster, Lilian G. Katz, Linda C. Smith, and Charles K. West for help and encouragement received in the writing of this dissertation. Particular appreciation goes to Profs. Smith and Lancaster whose unfailing help and patience made this paper possible. The author also wishes to acknowledge her indebtedness to Profs. Katz and West who encouraged the venture of crossing disciplinary lines to conduct research.

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CHAPTER 1

INTRODUCTION

> Since the research literature is the fundamental medium for reporting research knowledge, it is reasonable to assume, a priori, that the structure of the literature in a field will reflect the structure of the knowledge in that field. (Barron and Narin, 1972, p. 1)

This dissertation reports on an analysis of the characteristics of a portion of the educational literature that was conducted by examining citations in documents from the federally funded Educational Resources Information Center (ERIC) database. The documents sampled were randomly selected from those entered into the ERIC system by the ERIC Clearinghouse on Elementary and Early Childhood Education in Urbana, Illinois (ERIC/EECE) from March 1980 through August 1982.

The ERIC system is the result of a national effort by the United States to collect and coordinate information on education and to make it accessible to educators and others whose concerns might lead them to search this information. Although the system holdings are not comprehensive, because it rarely includes published monographs, it has become sufficiently large to justify being called an information system of international importance (Fernig, 1980).

The research was an investigation of the references that authors represented in the ERIC database cite in their work, not an investigation of the ERIC collection itself. The primary focus of the research was subject dispersion, that is, the degree to which scholars in one academic discipline or subject field rely on the literature or

information sources of other disciplines to inform their own. The research also investigated dispersion of citations over periodical titles and over some general publication formats, such as journals, books and monographs.

When academic disciplines are classified by those concerned with the organization and structure of knowledge, education is identified with the social sciences. A substantial number of studies of other social science disciplines have indicated that the social sciences do not, in the main, constitute self-contained fields of communication among the scholars in any of the specific disciplines. Extensive citation studies reveal that only psychology and economics draw a relatively high proportion of citations from their own discipline (70% and 80%, respectively). In other fields, the proportions are as low as 32% for political science and sociology, and 26% for anthropology (Bath University Library, 1980). A study of special education and general education found that these two subfields rely more heavily on psychology than on each other (Narin and Garside, 1972).

Only a portion of the educational literature was examined. That portion is the literature on elementary and early childhood education that was identified as falling within the scope of one of the sixteen ERIC clearinghouses and entered into the document base between March 1980 and August 1982. The initial date of March 1980 was selected because that date coincides with significant changes in the indexing practices of ERIC. It was decided that uniformity in document description should take precedence over the use of a sample representative of a longer time period. The cut-off date of August 1982

was selected to insure that all microfiche documents entered in the database would be publicly available at the beginning of the study. The subset of elementary and early childhood literature was selected for two reasons: (1) to allow close scrutiny of a widely scattered field; (2) this researcher is familiar with the literature. This researcher also believes that interdisciplinary cooperation is of special importance to educators in general and especially to those in early childhood education. This conviction follows from the assumption that education, as opposed to training, is responsible for the development of the whole child. Hence, because researchers in many disciplines are concerned with education, not only the literature on basic curriculum tools, but also that from developmental psychology, social work, anthropology, pediatrics, and a host of other disciplines, can be expected to inform educators.

The general objectives of this study were to answer four basic questions about the relationships between education and other disciplines: (1) To what extent does education depend on other disciplines? (2) What kind of literature is cited by ERIC authors? (3) What are the patterns and time dimensions of the materials that support educational theory and practice? (4) Do differences in information borrowing vary between authors in education according to the type of document and the audience for which it is intended?

The specific objectives of this study were: (1) To study information sources used by contributors to the ERIC database through the Elementary and Early Childhood Education Clearinghouse as revealed by bibliographic references; (2) To assess the reliance of ERIC contributors on the

literature of education generally and elementary and early childhood education specifically; (3) To assess the extent to which ERIC contributors derive information from other disciplines; (4) To assess the degree to which these educators use literature sources from journals and other types of documents in education as compared to journals or other types of documents identified with other disciplines; (5) To assess the median citation age of literature sources; and (6) To assess whether ERIC documents classified as research, interpretation, or practice oriented rely on different literature sources.

The assumptions made in designing the research are: (1) documents entered into the ERIC database by ERIC's Clearinghouse on Elementary and Early Childhood Education are representative of professional literature in elementary and early childhood education; (2) referencing is an indication of intellectual influence; (3) individual aberrations in citation behavior (e.g., failure to cite a source actually used or the citation of a source not actually used) are unlikely to bias the results in terms of the particular hypotheses investigated; (4) although the classification of ERIC document references selected for the citation sample is a subjective process, sufficient consistency can be achieved to analyze discipline dispersion.

CHAPTER 2

REVIEW OF THE LITERATURE

Educational Resources Information Center (ERIC)

The Educational Resources Information Center (ERIC), established in 1964 and under the jurisdiction of the National Institute of Education since 1972, supports the development of information resources by providing bibliographic control over a significant portion of the research, design, and development literature in education. Presently, ERIC is composed of sixteen clearinghouses, each responsible for covering a specified part of the educational literature. Within this decentralized system, each clearinghouse has the organizational capability to identify and serve the information needs of educators, researchers, and others interested in the subject scope of the clearinghouse. As each clearinghouse collects, abstracts, and indexes documents within its scope, these are announced through the monthly abstract journals, Resources in Education (RIE) and Current Index to Journals in Education (CIJE) and are also accessible through searchable data tapes, clearinghouse publications, and other specialized services.

RIE provides control over fugitive educational literature that is not easily accessible through other means. This bibliographic resource contains citations and abstracts to more than 200,000 documents and continues to expand by approximately 15,000 titles a year. Documents are available on microfiche and, in most cases, in hard copy.

Journal literature is announced in CIJE and, although journal articles are not made available on microfiche, they become part of ERIC's computerized database with documents compiled in RIE. CIJE contains information on more than 250,000 articles from more than 750 journals; approximately 20,000 articles are added each year.

ERIC attempts to identify, collect, and publicize a coherent body of research and practice-oriented literature relevant to educators. The decentralized system of individual clearinghouses represents principal research and practice divisions. From the perspective of each division, educational literature is entered in the database as a contribution to the information pool of that discipline.

From this perspective, ERIC can be viewed as a collection of professional literature on education; the most likely contributors to it are the academics in education. The academic portion of the educational community comprises groups and individuals studying educational problems, training teachers, and carrying out experimental and developmental work. The results of research are recorded primarily by established university procedures and follow the academic practice of citing other documents that serve as sources of information. This educational literature is in the form of theses, dissertations, papers, and articles that record the results of research and are published in specialized journals or entered in the ERIC database as either unpublished documents or non-copyrighted documents. Meetings and conferences of specialists are occasions for issuing papers that may or may not be published later. When research is a team project of some duration, report series, books, or compilations frequently result. In

research and development, the goal is to arrive at a satisfactory program or curriculum with related teaching methods and materials that have been tested through successive stages of development. These stepwise processes give rise to additional professional literature. Evaluation studies of existing programs are another source of literature important to the profession.

Document Selection

Within the decentralized ERIC system, each subject-related clearinghouse is charged with the following responsibilities relating to document collection (Trester, 1981): (1) the acquisition and selection of documents and (2) the cataloging, indexing and abstracting of documents and journal articles for RIE and CIJE.

Over the years, most of the directors of the clearinghouses have been specialists in the subject area of their respective responsibilities. The director of ERIC/EECE for the past thirteen years is a highly qualified, nationally and internationally recognized, specialist in the field of early childhood education. Through the years of its existence, this clearinghouse has also been served by an outstanding advisory board. Advisory boards are part of Central ERIC's insurance that every clearinghouse has the advice of a group able to provide professional subject area guidance and counsel on the direction of Clearinghouse programs, scope, document selection criteria, information analysis topics, and matters concerning dissemination of information (Trester, 1981). Additionally, technical direction has been provided by Central ERIC to insure both uniformity and quality control.

Each clearinghouse has specialists to control acquisitions, selection, cataloging, indexing, and abstracting. Selected staff members regularly attend annual training (or refresher) meetings (Trester, 1981).

The acquisitions effort in each clearinghouse is also shared in part by the ERIC Processing and Reference Facility, a subcontractor of Central ERIC that helps to collect federal, state, and international agency publications. These are then submitted to the appropriate clearinghouse for evaluation and possible entry in the database.

The ERIC collection is divided into two files: the RIE file, which records documents tagged with the ED prefix; and the CIJE file, which records documents tagged with the EJ prefix. Those documents entered in the RIE file have been identified as 'fugitive' literature. Those entered for CIJE are from clearinghouse-selected journals that are identified as falling within the scope of a given clearinghouse. Documents in the CIJE file are selected from prestigious journals that disseminate information on education. Thus, they are not only judiciously chosen, but also professionally refereed. The 'fugitive literature' is represented primarily by unpublished documents, yet 'fugitive' may be too ephemeral a term to do justice to this portion of the educational literature. These 'fugitive' documents selected for the ERIC database are considered to be potentially valuable to educators. The ERIC Processing Manual states:

> Documents acquired as candidates for possible announcement in RIE must be subjected to a set of rigorous selection criteria to determine their proper disposition. Although in many cases the documents were originally acquired selectively, in most cases the decisions of acquisitions staff are made in the

> absence of the actual documents, and necessarily preliminary to the final selection process. (ERIC, 1980, p. III-1)

In the above statement ERIC acknowledges that there is a difference between acquisition (the task of tracking down unpublished documents and requesting authors to submit them to be evaluated for possible inclusion in ERIC's document collection), and the actual selection process, which requires that each document be subjected to an evaluation by subject specialists.

This final selection is determined according to specific criteria (Trester, 1981), some of which can be summarized as follows:

1. Contribution to knowledge. Significance. The contributions to the field have to be substantive experiments well designed, and the data collection has to be logical. Research reports need clear objectives, hypotheses, methodology, conclusions and recommendations.

2. Relevance. Current social problems, emerging professional interests, and work on the frontier of educational subjects demand rigorous review for comprehensive information.

3. Innovations. Such documents have to be substantive, contain new ideas, substantiate or contradict earlier works and offer new hypotheses for testing.

4. Effectiveness of presentation. Clarity and vigor, new insights may make the discussion of an old subject a likely candidate for inclusion.

5. Current priorities and timeliness. Dated documents are less acceptable than new ones. Special Congressional, OE or NIE interests receive priority consideration for inclusion.

6. Authority of author, source, sponsor. Even those documents emanating from sources considered as "authorities" need rigorous evaluation.

7. Audience, comprehensiveness. The greater the audience potential, the greater the consideration for a document to be included in the ERIC database.

8. Availability. This point emphasizes the 'fugitive' notion of ERIC in the following statement:

> Documents which are commonly and easily available on a nationwide basis should generally be evaluated by selectors very strictly. It is unlikely that the use of such documents by the educational community depends on ERIC. . . . Unpublished papers and those having only local or specialized distribution should, on the other hand, be evaluated more leniently. ERIC may be the only database that has acquired the documents and the only one in a position to preserve the documents for future use. (Trester, 1981, pp. 256-257)

Table 1, reproduced from Trester (1981, p. 260), summarizes the types of documents received in the ERIC database between 1974-1979. Trester, however, cautions that only broad implications should be drawn from this table because a document tagged (by pubtype) as a dissertation may have as its principal descriptor 'Research Reports' and thus avoid being given a pubtype for research reports. Because the pubtype code was used to compile Table 1, such a document would not have been included under research reports.

Evaluation of ERIC Content

Usually, the content of the ERIC database has been evaluated from the user's perspective. Information quality and decision-making perspectives were studied by Asher and Vockell (1973). They selected 102 research-oriented ERIC documents from 1971 entries. These were submitted for evaluation to two groups: 100 research specialists and 100 education decision makers. The findings were dismaying from ERIC's

Table 1. Publication Types in the ERIC Database
Statistics for the Period September 1974 to May 1979

Code	Publication Type	Percent of File (May 1979)	Number of Accessions (May 1979)
R	Research Reports	33.34	24,799
S	Speeches, Conference Papers	17.13	12,742
G	Guides	12.30	9,148
B	Monographs, Books	7.36	5,474
K	Project Descriptions	5.99	4,457
L	Bibliographies	5.29	3,933
C	Curriculum Materials	4.96	3,692
T	Dissertations, Theses	2.99	2,226
J	Serial Publications	2.43	1,809
N	Statistical Data	1.69	1,254
P	Proceedings	1.63	1,215
H	Legislation	1.16	863
O	Others	1.16	863
Y	Annual Reports	1.03	766
D	Directories	.72	534
Q	Tests, Questionnaires	.64	474
V	Vocabularies	.12	86
A	Audiovisual Media	.05	36
M	Maps	.01	4
	TOTALS	100.00	74,375

From ERIC--The First Fifteen Years, 1964-1979: A History of the Educational Resources Information Center (p. 260) by D.J. Trester, 1981, Columbus, Ohio: SMEAC Information Reference Center. Reprinted.

point of view. The research specialists found the overall quality low. This was significantly different from the evaluation of the decision makers, who found the quality of the same documents to be much higher. The authors of the study concluded that ERIC disseminates low-quality research and, due to the decision makers' lower research sophistication and less critical acceptance, performs a disservice to the educational practitioner.

An equally damaging indictment was delivered by Harold Howe II at the annual AERA meeting in 1976:

> My one comment on the ERIC system is that if it had started with a stronger element of quality control and less concern with coverage, it would now be a better show. Not that it isn't useful, and its brief studies on particular issues are excellent. But at the touch of a computer button, one learns more than one cares or needs to about what's in print on most education-related subjects. I realize, of course, that there is a process of selection for what is reported by ERIC. I wonder whether it would be possible to develop a process of grading. (Howe, 1976, p. 4).

Selection was criticized by other evaluators as well, but on different grounds. Steiger (1975) found that the collection contained few practice-oriented documents, and that the demands of teachers, supervisors, administrators, and curriculum developers were not met by theoretical documents.

Wanger (1972) studied educator reactions to clearinghouse information products. Her major findings indicate that these products are positively valued, used and useful, but by a very limited audience because they are not well known. Hull and Wanger (1972), surveying

educators, found that school-based people expressed a need for information on curriculum materials useful in the classrooms, materials which are not widely available in ERIC.

To summarize, the ERIC database is "a system intended for greatly divergent user groups with a wide range of purposes for their use--a system of diffuse and global goals on the national level and great diversity of specific objectives among the various component parts." (Daniel, 1978, p. I-1)

Document Organization

As mentioned above, part of the ERIC database comprises fugitive documents. Since 1975 this part of the database has been approximately 40%-45% of the total input (Trester, 1981). These documents are indexed in Resources in Education (RIE). Volumes of this publication have appeared monthly since November 1966, with mid-year and annual cumulations. The Current Index to Journals in Education (CIJE) first appeared in January, 1969. After a few years, the total number of journals settled to 750, although each clearinghouse has the option of deleting or adding titles that fall within its scope for indexing. However, it must be noted that not all journals are equally covered. Certain ones considered 'core journals' are indexed cover-to-cover, but another group of journals is covered on a selective basis. In selective coverage, a clearinghouse reports only those articles appropriate to its scope or those relevant to the field of education.

There is another major difference between CIJE and RIE documents. RIE documents, for the most part, are available on microfiche (a small

portion are not, but the source is included in RIE). Those documents indexed in CIJE must be read in the original journals or as reprints from the publisher. A portion may also be obtained from University Microfilms, Ann Arbor, Michigan.

ERIC/EECE: Selection and Indexing

The Early Childhood Education Clearinghouse was established on March 1, 1967. Later, its scope was extended to include Elementary Education, and it became the ERIC Clearinghouse on Elementary and Early Childhood Education (EECE). The following scope note is quoted from the ERIC Processing Manual:

> Scope of Interest:
>
> All aspects of the development and education of children from birth through 12 years, excluding specific elementary school curriculum areas. Among the topics covered are: prenatal and infant development and care; preschool and day care programs and related community services at local, State and Federal levels; regular class placement of handicapped children; parent/child interactions; parent education; preparation of early childhood personnel; foster care and adoption; theoretical and philosophical issues related to children's development and education.
>
> Specific subjects of interest include: Head Start; Child Development Associates; Follow Through; home intervention programs; day care (family, before and after school, private and public); mainstreaming; parent education and parenting; family life; child development; learning and cognitive development; infants; music, art, and interdisciplinary curriculums, etc. not covered by curriculum clearinghouses; preschool curriculum; public policy and children; adoption; child advocacy; foster homes; effect of television on children and families; preschool and day care staff development; play; language development and acquisition; learning and motivation theory; socialization; sex role

> socialization; and sensory motor development. (ERIC, 1980, p. 11)

The same manual summarizes ERIC/EECE's scope in the following statement:

> Prenatal factors, parental behavior; the physical, psychological, social, educational, and cultural development of children from birth through the primary grades; educational and learning theory, research, and practice related to the development of young children, including teacher preparation, educational programs and curriculum-related community services, groups and institutions, administrations, and physical settings as well as theoretical and philosophical issues. Includes both the early years and childhood (ages 0-7), the "middle years" (ages 8-12), and early adolescence (10-14). (ERIC, 1980, p. 11)

It must be emphasized that the scope is strictly adhered to when selecting entries for RIE. CIJE entries are treated differently, especially those journals covered in their entirety. Although the journals selected by the ERIC/EECE Clearinghouse for indexing are primarily within the scope or are supportive of the scope, some individual articles may not be. In this sense, EECE also may index articles outside its scope. Within the time period of this study, changes have occurred among those journals indexed cover-to-cover and those indexed selectively. Some titles have been added and others have been deleted. The outstanding fact about CIJE documents, however, is that these documents are refereed literature--that is, they have been accepted by the editors of their respective journals and these journals, at least in the view of the selectors for the ERIC/EECE Clearinghouse, support and supplement the identified scope.

Table 2 presents a compilation of journals indexed cover-to-cover and those indexed selectively during the period of this study.

Two aspects of ERIC documents need special consideration:

1. Document Publication Types. During the indexing process, a code number designating publication/document type (pubtype) is affixed to each document. There are 34 such codes, each specifying a type of document (e.g., dissertations, theses, research reports, tests and evaluation instruments, opinion papers, etc.). These codes allow a high degree of categorization as well as speculation as to the intended audience for the individual document. However, twenty of these pubtypes also present a problem because, if the subject or content of the document corresponds to one of these twenty pubtypes, it is used as a descriptor for the document and the pubtype code number is not used even if, under normal circumstances, the document type dictates such an inclusion. Given this fact, all those documents that list one of the twenty pubtypes as a descriptor need to be checked to see if they also merit that pubtype code to identify them as a document type.

2. Descriptors and Identifiers. These two concepts are similar but, although a descriptor is embedded in the ERIC Thesaurus, an identifier is either in a transition phase of becoming a descriptor or is reserved to identify such variables as place

Table 2. ERIC/EECE CIJE Journals

	1980-81	1981-82	1982-83
Adolescence	/	/	
American Journal of Education		X	/
Australian Journal of Early Childhood	/	/	
Child Care Quarterly	X	X	
Child Development	X	X	X
Child Study Journal	X	X	
Child Welfare	X	X	/
Childhood Education	X	X	X
Children Today	X	X	X
Day Care and Early Education	X	X	/
Developmental Psychology	X	X	X
Early Child Development and Care	X	X	X
Elementary School Journal	X	X	X
Elements: Translating Theory into Practice	X	X	
Human Development	X	X	/
Instructor	/		
International Journal of Behavioral Development	/	/	/
International Journal of Early Childhood	X	X	X
Journal of Applied Developmental Psychology	X	X	
Journal of Child Psychology and Psychiatry and Allied Disciplines	/	/	/
Journal of Experimental Child Psychology		X	/

Table 2. (continued)

	1980-81	1981-82	1982-83
Journal of Genetic Psychology	X	X	/
Journal of Personality and Social Psychology	/	/	/
Journal of Psychology		/	/
Merrill-Palmer Quarterly	X	X	X
Monographs of the Society for Research in Child Development	X	X	X
Probe	/	/	
Psychological Bulletin	/	/	/
School Review	X		
Young Children	X	X	X

X Journals indexed cover-to-cover / Selectively indexed

names, common names, etc. Descriptors and identifiers can also be weighted to indicate major aspects of the content of a document. Up to six weighted terms can be used per document. The weighted terms, however, may not exceed two in the identifier field. Additional problems make automatic manipulation of descriptors difficult:

1. Non-mandatory age-level descriptors of which there are five distinctively relevant to ERIC/EECE: 'Infants', 'Young Children', 'Children', 'Preschool Children', and 'Preadolescents'. Each of them carries a specified age range and is suggestive of broad subject divisions. However, if the age level descriptor is embedded in another descriptor, it need not be used. (For example, in the case of a document using 'Adopted Children' as a descriptor, 'Children' need not be used because of the inclusion of 'Children' in the first term.)

2. Educational level descriptors are mandatory if the document addresses an educational level. Six of these are pertinent to EECE: 'Early Childhood Education' with two narrower terms, 'Preschool Education' and 'Primary Education'; 'Elementary and Secondary Education' with a narrower term, 'Elementary Education'; and the further narrowed term, 'Intermediate Grades'.

The use of pubtypes and descriptors, although facilitating access, is open to criticism because of possible indexer biases. These biases are minimized for the input from ERIC/EECE because of the internal supervision in the Clearinghouse and the organization of ERIC in general. The work of each indexer/abstractor is edited and verified before leaving the Clearinghouse. A further check is made at the ERIC Facility. There has been little staff turnover among indexers/abstractors during the years under study. Assuming that their experience has contributed to the improvement of their professional skills, it follows that the consistency and quality of indexing is likely to have improved.

Education as a Discipline

The above discussion of descriptors and identifiers as related to ERIC/EECE documents was included because, along with pubtypes, descriptors and identifiers suggest the possibility of a more in-depth analysis of the reliance of ERIC/EECE documents on other disciplines. This researcher assumed that pubtypes can be used to distinguish between intended audiences and, hence, that a certain pubtype or a combination of pubtypes defines a document as either research-, interpretation-, or practice-oriented. Along with the idea of an intended audience goes the notion that the closer a document is to the cutting edge of the discipline (i.e., research-oriented), the more scholarly and interdisciplinary its approach, thus referencing more current works and sources from a greater variety of disciplines. Other documents

interpret research relevant to educators (i.e., interpretation-oriented), and other documents are strictly concerned with the practice of education (practice-oriented). Practice-oriented documents and their intended audience are not necessarily on the cutting edge of the discipline, and thus these documents would tend to select references from older practice-approved education documents.

A document descriptor in combination with specified pubtypes should identify not only the audience orientation of the document but also a targeted content subset. Content subsets such as child development or home intervention programs, although distinctly concerned with children, should exhibit different 'other' discipline reliance. Possible candidates might be psychology in the first instance and sociology in the second instance.

The above brief comment suggests that even the analysis of a relatively small subset of professional education literature, such as that on elementary and early childhood education, cannot be assumed to address a uniform set of concerns. Young children and their education, as a subject matter of professional literature, covers as many diversified concepts as the study of any other population. Subject dispersion to other disciplines is implied by the complexity of the scope. The affinity of this subject area to other disciplines may be determined not only by audience orientation, but also by the content or specific problem addressed. This research, however, did not attempt to investigate the content of ERIC documents through the use of descriptors and identifiers; rather, it focused on bibliographic information provided through citation practice.

Education is an applied social science, concerned with the maintenance of society as well as with the development of the young members of society. The majority of the educators or teachers in the field are called upon to solve practical problems as they teach. These problems are cast differently in different learning and school situations. Meanwhile, the researcher may be removed from the practical realities of teaching, and the results of research need summary interpretation to be useful to practitioners. However, for any group such as educators, there must be a shared ideology, a common reference of "what it is all about" that forms the link betweeen practitioners and researchers. It may be no more than a belief system that commits a group to the improvement of mankind through education, or it may be as strong as a shared theoretical orientation that informs the profession and defines a discipline.

Kuhn (1970) describes science as going through the phases of normal science and revolutionary science. During the normal science phase, there is consensus among researchers in the given field as to the paradigm (a coherent set of shared assumptions, or a shared theoretical orientation) that guides research in the field and lays the foundations for practice. In education, it is not easy to identify such a paradigm for practitioners or even researchers.

Kuhn distinguishes between fields that have a paradigm and those in the pre-paradigm phase. In the pre-paradigm (or revolutionary) phase, the field does not have a theoretical orientation accepted by all its practitioners; a distinguishing feature of this phase is that the field is splintered into competing schools of thought. This appears to be a

close approximation of the state of the art in education. Certainly, education has gone through revolutionary phases, as shown by the events of the past several decades, and may still be doing so. Kuhn contends that, to achieve progress in a science, there must be a paradigm about which there is consensus among the researchers in the field and that can guide future research.

> When the individual scientist can take a paradigm for granted, he need no longer, in his major works, attempt to build his field anew, starting from first principles and justifying the use of each concept introduced. (Kuhn, 1970, pp. 19-20)

In Kuhn's view, the existence of a paradigm allows a field to expand its knowledge.

> Without such consensus, scientists would spend their energies in continual debate over fundamentals. Such debates often become philosophical and social instead of remaining empirical and theoretical. (Cole, Cole, and Dietrich, 1978, p. 212)

It must be noted that Kuhn sees consensus as a functional, but not necessarily a sufficient requirement for progress in a field. He notes that, during the normal phase, consensus is maintained through adherence to existing paradigms, even in the face of counterevidence. Evidence that cannot be explained by existing theories is frequently rejected. (Kuhn cites Newton's Laws of Dynamics, which were not rejected even though observations diverged from his theory.) Kuhn suggests that paradigms are not equally developed for all fields and that the social sciences have yet to develop theirs. What Kuhn saw as true for all social sciences 20 years ago may still hold true for education today.

Kuhn's description of paradigms is an all-encompassing concept of an entire constellation of beliefs, values, and techniques shared by a given scientific community and employed by that community as models for developing solutions to puzzles that are based on the solutions to other puzzles or problems.

> The study of paradigms . . . is what mainly prepares the student for membership in the particular scientific community with which he will later practice. (Kuhn, 1970, pp. 10-11)

The relevance of his point is that social sciences are beset by conflicting schools and lack the paradigm needed to synthesize past achievements with present activity and to provide for further progress through ongoing problem solving. Social scientists tend either to hold allegiance to various schools of thought or, at the other extreme, shift ground all too easily in accordance with the dominant trends in the field or the demands of wider social considerations. The consequence is that old ground is constantly being reexamined and that novel, at times even superficial, fashions are taken for progress.

Thus, Kuhn contends that progress in the social sciences is impeded by the tendency of social scientists to put more energy into factional disputes than into synthesizing knowledge for the purpose of solving substantive problems, the tendency to ride the dominant tide of the times, and the tendency to shift their ground in research for the sake of expedience (Tanner and Tanner, 1980).

Social scientists and educators are not the only groups that can be accused of "riding the dominant tide of the times" or "jumping on the

bandwagon". Federal funds for research projects in the physical sciences have shifted because of the endorsement of a particular administration or social pressures; research on solar energy and gasohol are cases in point. In education, the shifts with the tide may have received more public attention. The following are a few examples:

Coleman's shifts in the case of school desegregation are an example in education of the interpretation of research in view of the wider social situation. At one point he strongly advocated social and racial homogeneity (Coleman, 1966); a few years later he contended that there was not sufficient evidence to preclude the possibility that benefits derived from this homogeneity might not better be obtained by other means (Coleman, 1972).

Bruner's influential pronouncements also shifted. At one time, he offered us a disciplinary curriculum prescription (Bruner, 1961). Later, he discarded this prescription in favor of social relevance of the curriculum (Bruner, 1971). Since the mid-1970s the tide of curriculum relevance has yielded to curriculum retrenchment by returning to fundamentals and basic education. Conceptual progress is equally difficult when leading figures such as B. F. Skinner refuse to recognize that various systematic positions are making valuable contributions and that no one position, such as behaviorism, represents the totality of human nature (Skinner, 1971).

Elementary and early childhood education has witnessed several shifting moods and trends in this century. Some of the trends were caused by the thinking of such influential figures as Freud, Froebel, and Piaget. Still others have been influenced by the general tenor of

their times and how society perceived itself at that moment.

In the 1920s and 1930s, major attention was given to physical and intellectual development. In Undegraff and his colleagues' book (1938), Practice in Preschool Education, five of the eleven chapters were devoted to intellectual development, one chapter to personality, and one to social-emotional development. From the 1940s to the 1960s the attention shifted from intellectual growth to social-emotional development. The influences were primarily those of Freud and psychoanalysis, which also influenced research in child development. Almy stated: "Too often, the free expression of impulse rather than its eventual mastery and direction was made to seem to be the primary goal for the nursery school." (1968, p. ix)

In the late 1950s, there was a reawakening of interest in the development and guidance of effective thinking for young children, leading to renewed interest in Piaget and cognitive development. In the 1960s and 1970s, early childhood texts still devoted attention to social and emotional development, but intellectual development was receiving increasing attention. This trend was noted by Osborn (1980), who identified nine influential textbooks published between 1939 and 1972 and counted index references to intellectual development, social development, physical development, toilet training, and Piaget in each of these texts. Table 3 is a reproduction of Osborn's findings.

Thus, it might be concluded that there has been substantial ferment in the field of early childhood education and little consensus on major issues. Such shifts or lack of consensus need not be viewed as detrimental to the development of paradigms in any discipline. Ferment,

Table 3. Index References from ECE Texts (1939-1972)

Author and year	Intellectual Development	Social-Emotional Development	Physical Development	Toilet Training	Piaget
Foster (1939)	15	49	28	36	0
Kellogg (1949)	1	53	18	22	0
Read (1950)	3	119	7	15	0
Gans et al. (1952)	4	30	10	0	1
Ward (1957	20	9	2	0	0
Hammond et al. (1963)	13	34	4	1	0
Leeper et al. (1968)	25	27	6	1	9
Read (1971)	65	156	11	9	6
Hess and Croft (1972)	39	31	3	0	14

From Early Childhood Education in Historical Perspective (p. 154), 1980, Athens, Ga.: Education Associates. Reprinted.

new ideas, exploration, and experimentation are inherent in growth and development. Achieving a consensus on concepts underlying an emerging discipline, in fact, may be viewed as stifling growth. It would not be difficult to argue that social sciences are society oriented, that education is service oriented, that ERIC is meant to meet the needs of divergent groups of educators with current information on current topics, that our educational concepts are embedded in principles of democracy, and that any consensus or shared assumptions would be contradictory to democratic precepts.

The study of young children precedes systematic inquiry in the education of young children (Katz, 1970). Katz notes that specialists in developmental psychology, pediatrics, social work, anthropology, nutrition, and other fields have shown strong scientific interest in young children through problem-oriented research to discover means of offsetting the ill effects of poverty. A more recent inquiry is the investigation of young children's education as a disciplinary concept. Katz gives a working definition of early childhood education as

> Group settings which are deliberately intended to effect developmental changes in children in the age range from birth up to the age of entering the first grade. With this definition, education rather than child development or child rearing becomes the point of entry into the field, thus giving early childhood education disciplinary status in its own right. (Katz, 1970, p. 83)

The parameters of this research exceed Katz's definition, which does not include the development of elementary school children, yet this researcher agrees with the idea of identifying the broadened field with

a discipline orientation through "group settings which are deliberately intended to effect developmental changes". Katz noted that, although young children have been studied by researchers associated with other disciplines and that these studies preceded inquiries in the formalized education of young children, recent interest in early childhood education suggests that this field of education is emerging as a discipline with its own corpus of professional literature. This view conveys the idea that early childhood and elementary education is in Kuhn's pre-paradigm phase. As the field matures and acquires its own professional literature, the research front of elementary and early childhood education should credit previous scientific works from those disciplines whose research orientation has included young children.

Bibliometrics and Citation Analysis

> . . . each paper, each theory, formula, structure, hypothesis or result is laid down on some sort of foundation of prior work to which it is related more or less strongly. (Price, 1978, p. 250)

In research papers and other professional literature, this idea extends to bibliographic referencing of those prior works that have laid a foundation. References tie papers within and across disciplines into networks of ideas. If we accept that referencing implies a relationship between the cited and citing document in part or as a whole, then a subject relatedness exists in part or as a whole.

A citation or bibliographic reference exists as long as the work itself exists and allows quantitative analyses of professional

literature that can illuminate many facets of disciplines and research. Such markers left by researchers are unobtrusive indicators of intellectual influence. Furthermore, it can be supposed that the cutting edge of any discipline is based on theory, models, research, and the dissemination of findings. The results are a cumulation of new knowledge, information, or even discrete facts. However, these results, whether from the perspective of application or research, have to enter the consciousness of the members of that discipline.

Traditionally, the new knowledge that informs a particular discipline has been shared formally through professional literature. This literature becomes one of the channels for dissemination of information critical to the growth of the discipline or the field of study.

An outstanding feature of this mode of sharing knowledge, information, or facts is the use of references. In fact, the use of references has frequently implied the existence of scholarliness. More importantly, these references tie together writings into a network that circumscribes the borders of the discipline. Studies relating to citation networks are an important facet of bibliometrics.

Alan Pritchard, who has been credited with coining the term bibliometrics, states that the definition and purpose of bibliometrics is

> to shed light on the processes of written communication and of the nature and course of the development of a discipline (in so far as this is displayed through written communication), by means of counting and analyzing the various facets of written communication. (1969, p. 348)

Hawkins (1977) defined bibliometrics more succinctly as "quantitative analysis of the bibliographic features of a body of literature." (p. 13)

The building blocks of bibliometric study begin with written communications, referred to as documents, that are uniquely identified (e.g., books, journals, reports, papers, journal articles) through a bibliographic description in the form of a citation.

The two terms 'reference' and 'citation' are similar, but should be distinguished. A reference is given to another work and acknowledges a contribution; a citation is a received acknowledgment of such a contribution. The two terms appear to be used synonymously in much of the literature in the subset of bibliometric study referred to as citation analysis (Smith, 1981).

Early Works in Bibliometrics

Some of the early works in bibliometrics that have greatly influenced their successors are summarized below. More complete discussion of these and extended bibliographies can be found in Hjerppe (1978, 1980), Pritchard (1969), and Narin (1976).

Hjerppe (1978) and Lawani (1981) indicate that the first bibliometric study was done in 1917 by Cole and Eales, who analyzed the literature of comparative anatomy for the years 1543-1860 to trace the development of the taxonomy of animals and the study of anatomy as well as contributions to these subjects by researchers in different countries (Cole and Eales, 1917). Other authors (e.g., Martyn and Lancaster, 1981; Potter, 1981) have cited Hulme's (1923) study as the first one.

In any event, Hulme appears to be the first to have used the term 'statistical bibliography' to refer to what is now known as bibliometrics. Hulme analyzed the International Catalogue of Scientific Literature for 1901-1913 and ranked (1) journals by country of production and (2) author entries by the year of publication (Hulme, 1923). The third study to appear, and the first to analyze citations, producing a list of the more important journals for chemical education, was by Gross and Gross (1927). These two authors noted which journals had been cited most frequently by articles published in the Journal of the American Chemical Society. Their concern was to identify the most important chemical journals; they conceived the idea of rank ordering journals through citation frequencies. Lotka (1926) developed a law stating that the number of people producing n papers is a proportion of $1/n^2$; the article in which this was published has had significant influence ever since.

One of the fundamental phenomena of bibliometrics was discovered by Bradford in 1934. Bradford's law of scatter describes dispersion of documents in a specific discipline or subject area and states: "the aggregate number of articles in a given subject, apart from those produced by the first group of large producers (periodicals), is proportional to the logarithm of the number of producers concerned, when these are arranged in order of decreasing productivity" (Bradford, 1934, 1953). In other words, if a ranked list of periodicals is divided into groups, where each group provides approximately the same number of articles, the number of periodicals in each group increases geometrically.

Cason and Lubotsky studied English language psychology journals published in 1933 and analyzed the extent to which one subfield influences and is influenced by another (Cason and Lubotsky, 1936). Although these two researchers also addressed such problems as self-citation, multiple citations, and variation in journal title abbreviations, their main contribution was the idea of tabulating cross-citation networks. They noted ratios of references attributable to the journals in which the publications occurred and those attributable to other journals. Through these procedures, they found that psychology journals appear to cite more psychology than psychiatry journals. The idea of dependence of information on one's own discipline and on other disciplines was introduced. In 1935, Zipf published his work on word frequency in texts. Zipf's findings related to Bradford's because the distribution of word usage, in point of fact, closely resembles the distribution of journal articles over journal titles, as discussed by Bradford. Fussler (1949) studied the research characteristics of professional literature cited in American chemistry and physics journals. He measured the importance of different subject fields to chemistry and physics, the time between the publication of literature and when it was first used, document types and their relative importance, the important journal titles in each field, and the national origins of literature used in United States publications. Daniel and Louttit (1953) discussed literature growth rates, and used cluster analysis and mapping based on similarities of citation patterns in journals of psychology. In 1960 Burton and Kebler, studying the aging of literature, proposed the concept of 'decay'. They introduced the

term 'half-life', making an analogy with the decay of radioactive substances. The early 1960s brought Price's influential works Science Since Babylon and Little Science, Big Science. In these two books, Price examined the structure of scientific enterprise. In 1965 he published a study showing networks of papers interlinked by references and how such findings can be used to define the research front. At the same time, he suggested citation rate as an alternative to publication rate in the measurement of scientific productivity (Price, 1965). Bibliographic coupling was introduced by Kessler, who stated that the similarity of two papers can be measured by the number of references they have in common, and clusters based on this concept can give meaningful groupings (Kessler, 1963). The year 1961 saw the production of the first Science Citation Index (SCI), followed in 1972 by the Social Sciences Citation Index (SSCI). Rather later, in 1978, the Arts and Humanities Citation Index appeared.

The above works set the stage for bibliometrics. Subsequent papers are indeed numerous and interest continues to grow as the potential contributions of bibliometrics to scientometrics and the sociology of science is increasingly recognized. One branch of bibliometrics, citation analysis, is particularly relevant to the present investigation.

Applications of Citation Studies

Narin identifies two broad, parallel paths in the development of citation analysis: "as tools for the librarian, and an evaluative path using these same tools to illuminate the mosaic of scientific activity." (1976, p.1)

Some libraries use citation studies to aid book and periodical selection. Periodical title selection for libraries through the use of citations was first attempted by Gross and Gross (1927). At the present time, the Institute for Scientific Information (ISI) compiles citation analysis data in the Journal Citation Reports, ranking journals by total citations received and by an impact factor that relates the number of citations received by a journal to the absolute number of articles published by that journal. Citation analysis can be used to determine the most important journals, and libraries can use this information for journal selection. However, such practice is based on the assumption that the most frequently cited journals are also those most frequently requested. Depending upon the type of library and its clientele, this may not be true.

Attempts have been made to identify the "most important books" in order to aid libraries in book selection. Baughman (1973) obtained 11,130 journal article citations from 446 articles indexed in Social Sciences and Humanities Index, Volume 24, under the subject headings 'sociology' and 'social'. He was able to identify 99 books considered "the best in sociology". Force (1978) identified four books essential to environmental education by use of citations derived from journals indexed in ERIC's CIJE.

Bibliometrics has also been used to evaluate the collections of libraries or the coverage of databases. Bradford's law enables the evaluator to estimate the total number of periodical titles that can be expected to contribute to a specific subject or the total number of papers those periodicals will publish. When the numbers derived from

Bradford's law are compared with the number of entries in a database, an estimate of the completeness of coverage can be made (Lawani, 1981).

The focus of the present study, in which a portion of elementary and early childhood education literature is examined through citation analysis in order to illuminate the characteristics of this discipline, falls in Narin's second category or path.

The first bibliometric study in this category, although not based on citation analysis, was done by Cole and Eales (1917), who counted publications in comparative anatomy from 1543 to 1860. Their goal was to trace the historical path of anatomical thought and influence among scientists as they studied groups of animals and their anatomy. Cole and Eales, through their analysis of 6,436 records, were able to demonstrate the growth and development of a subject area.

Hagstrom (1970), in a study of journal literature in mathematics, physics, chemistry, and biology, found that in a field in which there is a relatively high degree of organization of knowledge, a high proportion of references from one journal is concentrated in a relatively small number of journals. Fields that have a small knowledge base, and draw heavily on different areas of knowledge, have a dispersed reference structure. Hagstrom also noted differences in the referencing behavior of different types of publications (e.g., reports of original research, review articles, research monographs, and textbooks) that may be accounted for by the level of sophistication of the intended audience. Hagstrom suggested that, although references in research articles are important, references in review articles are more important, and references in textbooks are the most important for establishing the

status of highly productive and creative scientists.

Price (1970) suggested that the amount of referencing might be considered an indicator of scholarliness, although he added:

> I would not like to push this point too hard by claiming, for example, that all papers with a dozen bibliographical references were more scholarly than all those with only ten. Nor would I dream of maintaining that all papers with ten references were of similar scholarliness. (1970, p. 7)

Price raises three salient points in discussing the extent of referencing in scientific papers. (1) The norm for scholarly papers is approximately 10 to 22 references; this is based on calculations of literature growth of seven percent per year. This growth of new citable literature allows roughly, a rise of one citation for successive papers, thus accounting for the increase of referencing in recent journal articles. In support of this point, Price cites the Parker, Paisley, and Garrett (1967) findings for the social sciences. They found that references jumped from 8.4 and 9.4 in 1950 and 1955 to 15.2 and 15.5 in 1960 and 1965. (2) Papers with many references, or those that lie above the norm, are usually review papers that condense recent literature in some specialty. Price (1970) noted, "The only new finding I have to offer is that there seems much less distinction than I had expected between these review papers and the research papers; they merge into each other insensibly." (p. 8) (3) Papers that lie below the norm are unscholarly papers. These papers imply that "culminating scholarship does not exist, exists but is irrelevant, or exists relevantly but is unknown." (Price, 1970, p. 8) Price also identifies papers produced by

technologists, who appear to disregard the scientific practice of citation.

A few studies have used citation analysis to compare academic/research-oriented documents and practice-oriented documents. Culnan (1978) studied the citation practices of academics and practitioners who published papers in the proceedings of one national computer conference in 1972. She measured how the two groups differ on types of documents cited, age of cited literature, and core journals cited. Her findings show that both groups relied on the same core journals and cited documents of approximately the same age. However, 13% of the academic papers had no citations and 19% of the practitioner papers had no citations, indicating that a slightly higher proportion of academicians followed the practice of citing. The mean number of citations per paper was 10.9 for academics and 10.6 for practitioners, but when these means were adjusted for citationless papers, academics averaged 12.4 citations per paper and practitioners averaged 12.6. In neither case were these differences significant. The median citation age was two years for both groups. Both groups cited journal literature most frequently. However, when all document types were assessed, it was noted that academics cited more books and more technical reports than practitioners, even though the rank order of the different document types was the same for both groups. The use of core journals was the same for both groups, and the majority of both groups cited the research front (documents five or fewer years old). Culnan's findings suggest that, in computer science at least, the differences between research and practice may be negligible and indicate that there is good communication

between practitioners and academics in this field.

McRae (1974) assessed communications in the accounting field by studying the citations in 17 accounting journals that were subdivided into three groups: accounting academic network journals, the accounting management network journals, and the accounting professional/general network journals. The analysis of the citations exchanged between the journals showed a congruent flow of messages between the three subsystems. However, only two of the academic and one of the general journals accounted for most of the messages transmitted in the network (55%), and McRae concluded that, although accounting knowledge is relatively open to other social science disciplines, it wields little influence on disciplines outside the social sciences. Most professional accounting journals are collectors of information rather than distributors of information.

Research front documents for the sciences have been identified as those in which 75% - 80% of citations are given to the literature of the past five years (Price 1970). Meadows (1974) indicated that research front citation is much lower for the social sciences and places it at just above 40%. However, Price and Meadows concurred that it varies for different fields and even for different journals within the fields. When all disciplines are considered, about 50% of all citations are to items published in the preceding five years. Line and Sandison (1974), in a review article on change in literature over time, hypothesized that

> Literature may decline in use faster when
>
> (a) it deals with data of ephemeral relevance (e.g., prices, stocks, experimental data filling in a theory)

(b) it is in the form of a "report", thesis, "advance communication", or preprint (which may be written up more fully or in more accessible form later)

(c) it is in a rapidly advancing technology.

Literature may decline in use more slowly when

(a) it is descriptive (e.g., taxonomic botany, properties of materials, basic methodology)

(b) it deals with concepts (e.g., philosophy, political theory, new or seminal ideas)

(c) it is critical (e.g., literary criticism, historiography). (pp. 317-318)

Line and Sandison identified two basic types of literature use over time. The first, basic search, is usually restricted to a specific area of interest and is intensive and exhaustive, including the latest as well as the older references--that is, the search is date-independent. The other type is an updating search that is date-dependent and may fall in three categories, such as current awareness, catching up, or following up. Its distinctive characteristic is that it concentrates on relatively recent items published in the last two or three years. Line and Sandison stress the point that, although both types of searches emphasize recent works, this does not necessarily imply that older works are obsolete. They also discuss a special class of older works that may be considered classics in a given field. These they saw as documents that it would be almost improper not to cite. Other older works may continue to be cited because, although some ideas may be superseded, some point may have remained definitive. They summarize by stating that "some ideas decay rapidly in use, some remain steady or increase, and these are usually those that are most cited in the first two or three

years" (p. 316).

Meadows (1974) analyzed Fussler's (1949) study for the way in which chemists and physicists handle their own and each other's literature in citation. He concluded that

> physicists use relatively older chemistry literature than do chemists, and similarly (though to a lesser extent) chemists use relatively older physics literature than do physicists. We can, in fact, postulate a general rule that the less involved a scientist is with a particular area of literature, the more likely he is to cite its archival rather than its ephemeral publications. (Meadows, 1974, pp. 142-143)

Discipline dispersion has been analyzed in a variety of studies. Some of those that deal with social sciences or specifically include education are discussed here.

Earle and Vickery (1969) analyzed references from journals and monographs in the social sciences, but did not produce separate analyses for the two collections. Their analysis distinguished between self-citation (frequency with which a field cites itself) and self-derivation (extent to which a field is cited by others). These two researchers found an overall self-citation of 58% and self-derivation of 96% for the social sciences. They concluded that social scientists cite much literature outside their own fields.

When distinguishing between the 13 fields identified for social sciences in this study, they noted that 36% of the citations in education were to education sources, 11% were to psychology, 8% were to law and administration; the remaining citations were scattered over a wide variety of subjects. Ninety-two percent of education citations

were derived from education itself. Among the 13 identified subjects, this places education at the top for self-derivation; it is the social science that is least depended upon by other subjects. Education ranked 8.5 among the 13 subjects for self-citation. From the Earle and Vickery study, it appears that neither education nor other subjects are particularly dependent upon education as a literature source.

Distinguishing between books and periodicals, Earle and Vickery found that social sciences are less dependent upon periodical literature and more dependent upon books than science or technology. Twenty-two percent of social science citations, 12% of science citations, and 14% of technology citations were to books. Journals received 29% of social science citations, 82% of science citations, and 70% of technology citations. Other forms, not distinguished, accounted for the rest of the citations.

The Bath University Library study (1980), which examined subject relationships in the social sciences, discussed dependence of one subject on another and compared such findings between serials and monographs. The findings showed that subjects differed in their self-dependence. Some of the findings are as follows:

	Serials	Monographs
Psychology	70%*	52%
Economics	80%	60%
Criminology	29%	43%
Geography	31%	49%
Sociology	32%	33%
Political Science	32%	33%
Education	33%	56%

Education made relatively few references to itself and, for most fields, higher self-dependence was shown by monographs than by serial literature. The report concluded that "high self-sufficiency can indicate 'inbreeding'--unwillingness to seek enrichment from other subjects--or maturity and coherence." (1979, p. 67)

Line (1979), drawing upon the data from the Design of Information Systems in the Social Sciences (DISISS) Program, assessed whether citations in core journals are representative of references in all journals, and whether references in journals are representative of all references. The references were drawn from U.K. and U.S.A. monographs and journals. One set of the journals studied was a group of highly ranked journals; the other was randomly selected. The data were analyzed separately by journal and monograph formats.

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* The figures in this list refer to the percentages of citations in a field that are made to the field itself.

The findings revealed that references made by monographs are significantly different from those made by either ranked or randomly selected journals. Journal references decay much faster than monograph references. This decay concept was analyzed by comparing the percentage of references with pre-1964 publication dates to the percentage of references with 1964 - 1971 publication dates, and distinguishing references made to journal articles from those made to monographs. For the social sciences as a whole, journal literature decays faster than monograph literature because the proportion of journal articles cited and dated from 1964 to 1971 exceeds the proportion of those dated pre-1964. In most social sciences, the trend is reversed when referencing monographs; in this case, the higher proportion falls in the pre-1964 period. In education, references to journal articles follow the trend identified for social sciences as a whole, with 59% of references to journal literature falling in the 1964 - 1971 age range and 41% in the pre-1964 age range. Education differs from most social sciences in that most of the references to monographs also fall in the most recent period (64% in the 1964 - 1971 and 36% in the pre-1964 date range). Thus, education emerges as a subject area with comparatively higher proportions of rapidly decaying journal and monograph literature than most social sciences. Line speculates that " . . . there is probably a higher proportion than usual of articles of topical interest, and a correspondingly lower proportion of contributors to the research literature." (Line, 1979, p. 271)

For the social sciences as a whole, Line concludes that journals cite nearer the frontier of knowledge than monographs; that is, they

tend to cite more recent literature sources. Ranked journals were found to cite more recent work than the randomly selected journals.

The largest difference between journal and monograph referencing practice is in the proportions of references made to different forms of material. Journals make almost twice as many references to journals than do monographs (47% and 25%, respectively) but less to monographs than do monographs (39% and 51%, respectively). Furthermore, the ranked journals cite proportionally more journal literature than the randomly selected journals; in fact, the randomly selected journals cite the highest proportion of monographs in the overall sample. Education reflects this trend very dramatically.

Line also compared self-dependency or inbreeding (i.e., references to the home discipline) between journals and monographs. Social science monographs show a higher self-dependency than journals. In education, journal literature shows a 33% self-dependency, and monograph literature shows a 56% self-dependency. References made to disciplines outside the social sciences range more widely for monographs. Six percent of education journal references and seven percent of education monograph references are outside social science, indicating one of the lesser differences between journal and monograph citation practices in the social sciences.

Nicholas and Ritchie (1978) also discussed self-sufficiency (self-citation) and dependence of subjects in the social sciences using the DISISS data. They cautioned, however, that interpretation of the boundaries of a subject may influence self-citation percentage; the more broadly the subject is interpreted, the greater the likelihood of

self-citation. They reported that, in the DISISS study, educational psychology was classified with psychology and, consequently, the link between psychology and education was partially obscured if one wished to either include educational psychology in education or see the link between education and educational psychology. Nicholas and Ritchie reported the following citation data for education: 46.3% of periodical literature citations are to periodicals, 38.3% are to books, and 15.4% are to other formats; 28.8% of the citations in books on education are to periodicals, 57.2% are to books, 4.8% are to government documents, and 9.2% are to other formats.

> Generally speaking the results of citation studies have suggested that, when citing, document forms favour themselves. This is perhaps not surprising given that other kinds of self-citation, subject for instance, are much a feature of the citation network. (Nicholas and Ritchie, 1978, p. 124)

Barron and Narin's study (1972) delineates the structure of educational journal literature. They used 150 education journals, selecting those that contained 100 or more references per year for their sample. Two-step citation maps linked each journal to the two journals it cited most frequently. The citation chains formed nine subfield maps showing the relationships between different graphic clusters of journals. A cluster analysis, using all of the citations from each journal, confirmed the subfield clusters. Hierarchies that illustrated dependency relationships between individual journals and between clusters of journals were constructed. All of these analyses emphasized the dominant influence of psychology and indicated that it is a primary

source of knowledge for educational research. Two clusters close to the interests of this research were identified: child development, and elementary education and research. These two clusters, as well as the other seven, cite psychology journals far more often than they cite journals in the other clusters.

> Elementary education and research interacts heavily with guidance but has a one-way dependency upon educational psychology and research. The educational psychology and research cluster is the central link for elementary education, child development, guidance, and experimental and clinical psychology, serving as a primary source for elementary education, and gathering information for the rest. Guidance is a well-structured bridge between much of educational research and psychology, as its central position in the model demonstrates.
>
> Child development serves as a conduit connecting other journals and their clusters to clinical psychology. In turn, clinical psychology is the recipient of most of education's references to psychology, and itself refers directly to experimental psychology. Only special education, child development, and educational psychology of the other graphic clusters refer directly to experimental psychology. (Barron and Narin, 1972, pp. 30-32).

Barron and Narin concluded that, although the number of scholarly journals in education is small, the field of education is highly structured. The graphic clusters that emerged through two-step maps identified nine distinct subfields resting on a base of experimental psychology, indicating that psychology is the main source of commonly accepted knowledge in education.

> So it can be seen that most of education depends directly or through other subfields of education on psychology, primarily clinical psychology, but directly and indirectly through clinical psychology,

> on experimental psychology. Experimental psychology may be called the tap root of educational research. (Barron and Narin, 1972, p. 56)

Bibliometric Studies in Education

The field of early childhood was studied by L'Abate (1969) who used twelve textbooks and two journals of child development as literature sources for his citation analysis. L'Abate excluded self-citations and ranked authors by frequency of citations received to find who had held the highest ranks in the last 20 years. This study also discussed relative differences between journal and textbook citations. The findings yielded 22 most frequently cited authors. He also found that more references were given in journal than in book literature. L'Abate concluded that, for an author to be cited in a book, he had to be multifaceted and that

> Journal citations may reflect the most immediate applicability of an author's theory and experiments; textbook citations may include work that is more transcendent to the past, present, and future of the field. Furthermore, the discrepancies between journal and textbook citations suggest the possibility that, to be quoted in a textbook, an author's contribution needs to be multifaceted--that is, it should have more than one criterion for inclusion (theoretical, empirical, practical, didactic, etc.)--although inclusion in a journal may well be based on a single criterion (empirical as in the case of the two journals used in the study). (L'Abate, 1969, p. 91)

Summers (1979) derived bibliometric data from twenty volumes of the Journal of Reading. His findings were that three out of four articles in the sample had a single author. All the articles generated by the

authors (less reviews and bibliographies) were analyzed for citations in each article. The type of publication and the age of material cited were also evaluated. There was an increase in references from 1.0 per article for early volumes to 4.5 for the latest volumes. Journal articles received 37.1% of the citations and books 38.1%. The median age of books cited was 7-8 years. Of the 212 journals cited, 14 accounted for 50% of the total number of citations. Twenty-one percent of citations was accounted for by self-citation (the author citing himself).

Boshier and Pickard (1979) used citation analysis to study the extent to which adult education researchers are creating their own body of knowledge. Nine judges were used to classify references from articles in 10 years of Adult Education. The judges decided whether the cited literature was primary (from adult education sources) or secondary literature (from other sources). The findings showed an increasing tendency to cite primary adult education literature in later issues. Boshier and Pickard suggest that the existence and use of a unique body of knowledge (primary literature) is one of the hallmarks of an emerging literature for a field.

Two of the oldest bibliometric studies in education are both by Broadus (1953, 1965). He examined the second and third editions of the Encyclopedia of Educational Research. He analyzed citations by forms, subject, language, and age. Comparing his data from the two studies, Broadus (1965) found that, although serial literature (periodicals, monographs in series, and yearbooks) was more important than non-serial literature, its use in citations fell from 60.4% in the earlier edition

to 56.8% in the later edition. Citations to periodicals rose by 8% (to 45.4%) for the third edition. In the third edition, books received 32.7% of the citations. Citations classified with education declined from 61.9% in the 1950 edition to 56.4% in the 1960 edition. Broadus saw this as a healthy trend; researchers were apparently broadening their base and seeking relevant information from other disciplines. Outside of the home discipline, psychology received the highest percentage of citations: 9.1% in the second edition and 11.4% in the third. Citations to medicine rose from 2.5% to 6.2%. Broadus also found a change in median citation age for the literature. From 12 years in the 1950 edition, it fell to 7 years in the 1960 edition.

Narin and Garside (1972) studied the relationship of special education literature to general education literature and to psychology literature. Their findings were that the journal literature of psychology is cited heavily by both special education and general education journals. The graphic structure of the research literature resembled the letter Y with the two upper branches of special and general education appearing independent of each other and both dependent on psychology.

Force (1978) used CIJE to select articles on environmental education and applied Bradford's law of dispersion. Fifty percent of the articles were published in 12% of the journals, 75% in 21% of the journals, and 90% in 44% of the journals. Force also selected five volumes of the Journal of Environmental Education and studied dispersion of citations among journals, monographs, conference papers, reports, government documents and others. The bulk of the items cited were published within

the 10 years previous to his study. He produced a list of most cited authors (exclusive of self-citation and editorship/compilation counts). Five citations were used as the cut-off point to generate his list. He was also able to identify four titles that had been cited six or more times.

Crawford (1976) evaluated ERIC through a count of citations. He found that, in 29 doctoral dissertations in education written at the University of Illinois, only 56% of all referenced journals were covered by CIJE and 21% of all book, paper, symposium, government document, serial, and speech references were covered by ERIC's RIE.

Lukasevich and Summers (1983) looked at the characteristics of journal literature in early childhood education. They searched the ERIC's CIJE portion of the database with one descriptor--Early Childhood Education--for indexed entries from 1969 through 1983. Their search yielded 1,424 journal articles. The study identified the most important journals by the number of articles contributed. A Bradford distribution measure was done. In the second part of the study, Lukasevich and Summers included the RIE file and analyzed substantive content of the documents. They identified the 216 most important descriptors of early childhood education. The descriptors were used to group the literature under 10 major topics. A descriptor frequency for each topic was included in the study.

Hogan and Vahey (1983) identified the most frequently cited authors and works in child development by analyzing references in 14 textbooks. They identified 11 publications that were cited in 6 or more textbooks and 22 most frequently cited authors who were cited in 8 or more of the

14 textbooks.

The applications of citation analysis have not been exhausted by the research mentioned in this brief summary. Probably the most important point to make about this method of study is to suggest that it is a tool that can supplement other selection, evaluation, and communication network studies.

Criticism of Citation Studies

A basic assumption of citation analysis is that citations are important indicators that can be used to determine important scholars, institutions and publications in disciplines and subdisciplines. These ideas were critiqued by Smith (1981).

Smith's major criticism was that, because of overcitation and undercitation, the results of citation analysis can be misleading. Overcitation refers to cases in which works that have no real influence on the citing document have nevertheless been referenced. Undercitation refers to cases in which works of significant influence have not been included in the references. Examples of the second case are sometimes attributed to implicit citation, by which well-known works are mentioned in the text but have become such an integral part of the discipline that they fail to receive a bibliographic reference (Cole, Cole, and Dietrich, 1978). Obliteration through incorporation is another problem with undercitation. In this case, a descendent author, rather than the original author, is cited (Garfield, 1975).

Referencing has been an established practice for scholarly writings only since the beginning of this century (Garfield, 1979). It has been

noted, however, that the relationship between the cited and citing documents can be spurious. Garfield's (1965) list of reasons why authors cite previous works was noted by Smith (1981).

1. Paying homage to pioneers
2. Giving credit for related work (homage to peers)
3. Identifying methodology, equipment, etc.
4. Providing background reading
5. Correcting one's own work
6. Correcting the work of others
7. Criticizing previous work
8. Substantiating claims
9. Alerting to forthcoming work
10. Providing leads to poorly disseminated, poorly indexed, or uncited work
11. Authenticating data and classes of fact--physical constants, etc.
12. Identifying original publications in which an idea or concept was discussed
13. Identifying original publications or other work describing an eponymic concept or term...
14. Disclaiming work or ideas of others (negative claims)
15. Disputing priority claims of others (negative homage). (Garfield, 1965, p. 189)

What the above list indicates is that specific citations in any given document may be motivated by considerations other than just crediting previous work. Price (1963) noted that citations cannot be assumed to be conscientious, accurate, or consistent. Taken at face

value, citations can also perpetuate errors made by previous citers (Kaplan, 1965). When citations are made to discredit previous work or as a perfunctory measure to alert future researchers (Schaefer, 1977), such citations are substantially different from those that use previous work as building blocks.

Self-citation practices have been discussed by numerous authors and frequently viewed with suspicion and as motivated by self-aggrandizement (Garfield, 1979; Schaefer, 1977). Tagliacozzo, who studied self-citations in scientific works, found that self-citations were different from other citations to the extent that they tended to be to more recent works than citations to other authors (Tagliacozzo, 1977).

Another assumption is that citations are made to the best works. This is disputed by Soper (1976) who found that accessibility to the citer may be more important than quality.

The above notwithstanding, citation analysis and bibliometric concepts have been used, apparently successfully, to investigate concerns with written communications, as attested by Hjerppe's (1980) extensive bibliography which lists 2,032 entries as of December, 1980. One important reason for this continued endeavor is that

> Citations are signposts left behind after information has been utilized and as such provide data by which one may build pictures of user behavior without ever confronting the user himself. Any set of documents containing reference lists can provide the raw material for citation analysis, and citation counts based on a given set of documents are precise and objective. (Smith, 1981, p. 85)

Another answer to the criticism of citation studies was provided by Narin (1976), who reports 24 studies in which publication and citation correlated from 0.5 to 0.8 with such other measures of eminence as awards and academic rank.

Bibliometrics as a research tool has enhanced understanding of the form, structure, and growth of scientific communication and has shed light on the patterns of activity and research in various disciplines.

> If one keeps [the above] reservations in mind and also remembers that, in using citations one is studying the behavior of a small elite group, those who write papers (which may or may not be typical of all workers in the field one is studying), citations are a legitimate indicator of document use. (Martyn and Lancaster, 1981, p. 88)

CHAPTER 3

HYPOTHESES

Of the studies discussed in Chapter 2 that dealt with some portion of the education field, only three focused on early childhood education. L'Abate's (1969) study is quite dated and analyzed only citations in textbooks and two journals. Hogan and Vahey (1983) also analyzed textbooks. Lukasevich and Summers (1983) examined primarily journal literature, although their work on descriptor analysis for ERIC is relevant to the analysis in this study. However, these three studies were from different perspectives. The research reported here, although mainly concerned with literature dispersion, evaluated this dispersion from an interdisciplinary point of view.

Most of the studies dealing with literature dispersion from an interdisciplinary point of view have analyzed citations collected in journal literature. The ERIC database represents both journal literature and unpublished or fugitive documents. Taking these two kinds of literature implies a broader and, therefore, a more representative sample of professional literature of the field with more representative citation patterns.

ERIC is the single most important database in the field of education and offers an easily accessible subset of elementary and early childhood literature that has been selected and entered in the collection by one of its clearinghouses. The ERIC document collection has been criticized, but the criticism more often reflects the perspective of the critics rather than an overall lack of quality. Some researchers have

contended that documents do not exhibit rigorously controlled research designs, but these same documents were quite acceptable for decision makers (Asher and Vockell, 1973). Practitioners have claimed that documents are too theoretical (Steiger, 1975). These findings suggest that, since ERIC is meant to meet divergent user-group needs, documents are targeted for different audiences. In fact, the ERIC system has a built-in control in the form of pubtypes that can be interpreted, at least in part, to conform to groupings of intended audiences. The pubtypes are assigned by professional, experienced indexers and provide a reasonable way of categorizing ERIC documents by intended audience orientation: research, interpretation, and practice.

Kuhn's paradigm concept was introduced in Chapter 2 to suggest that education might be in a pre-paradigm phase. Following from this, three assumptions were made about the groups of writers whose literature was examined in this research: (1) The research-oriented group is on the forefront of the discipline, and draws heavily on other disciplines in order to forge new concepts in education. (2) The interpretation-oriented group is engaged mostly in interpreting educational research for the entire educational community, borrows fewer concepts from other disciplines, and relies more on educational research. (3) The practice-oriented group relies mostly on educational literature.

Working with these assumptions, and grouping publication type codes of ERIC documents according to orientation, the following hypotheses were tested:

1. In comparison to interpretation-oriented and practice-oriented publications, the research-oriented publications in elementary and early childhood education cite more literature, more recent literature and draw more heavily on the literature of other disciplines.

2. In comparison to practice-oriented publications, the interpretation-oriented publications in elementary and early childhood education cite more literature, more recent literature and draw more heavily on the literature of other disciplines.

CHAPTER 4

METHODOLOGY

The Population

An online search through DIALOG identified 4,317 documents as ERIC/EECE entries made in the ERIC database between March 1980 and August 1982. Of these documents, 2,676 or 62% are journal articles and are indexed as part of CIJE (document prefix EJ); 1,641 or 38% are considered 'fugitive' literature and are indexed as RIE (document prefix ED).

During ERIC's indexing process, each document is assigned from one to three publication/document types, referred to as pubtypes. Although there are 34 pubtypes, not all of the pubtypes are used with equal frequency, and not all of them have the same implication.

In this study 18 pubtypes were identified for the purpose of grouping ERIC/EECE documents into three subsets according to the orientation of the intended audience: (1) research orientation -- documents reporting original research; (2) interpretation orientation -- documents interpreting research and discussing concerns in education; (3) practice orientation -- documents giving guidance to educators. The identification of these three groups of documents was based on specific pubtypes. Document grouping was achieved by online searching of the ERIC database through DIALOG.

The following definitions were used to identify sets of documents that are exclusively devoted to each of the three orientations:

1. A research-oriented document is defined as one to which one or more of only those pubtypes associated with research orientation (040, 041, 042, 043, 110, 143) and no others have been assigned.

2. An interpretation-oriented document is defined as one to which one or more of only those pubtypes associated with interpretation orientation (070, 071, 120, 140, 141, 142) and no others have been assigned.

3. A practice-oriented document is defined as one to which one or more of only those pubtypes associated with practice orientation (050, 051, 052, 055, 090, 160) and no others have been assigned.

The online sorting by pubtypes grouped 4,095 documents or 94.9% of the population in exclusive subsets of research, interpretation, and practice orientation. A group of 144 documents, or 3.3% of the population, was identified as a hybrid group that mixed pubtypes from the three orientations. Seventy-eight documents (1.8% of the population) bore pubtypes from those not used for grouping because they appeared not to have a direct bearing on orientation as it was defined for this study.

ERIC indexing procedures indicate that, of the 34 pubtypes, 20 can be used as descriptors. A document with any of these descriptors has not been given the corresponding pubtype. Due to the groupings of

pubtypes used to identify orientations, 11 of these descriptor/pubtype overlaps fall in the group not used for categorization by orientation. The remaining 9 fall into the orientation categories as follows:

1. Practice orientation: Tests, Guides;

2. Interpretation orientation: Reports;

3. Research orientation: Theses, Doctoral Dissertations, Masters Theses, Practicum Papers, Statistical Data, and Research Reports.

Table 4 shows the groupings of pubtypes used to determine orientations and those that were judged nondiscriminating for purposes of orientation identification.

An inspection of the pubtypes used for the group termed 'hybrids' showed that there were only two types of combinations: research/interpretation and research/practice orientations. Table 5 shows the breakdown of these between CIJE and RIE indexed documents.

The online search through DIALOG yielded printouts grouped by the three orientations, by the 'hybrid' group, and by documents that could not be grouped by the use of designated pubtypes. An additional two documents were picked up by searching the group of documents identified by the nondiscriminating pubtypes. These two documents included critical descriptors that corresponded to pubtypes considered as discriminating for the orientations. This final search added one

Table 4. Pubtype Distribution

Research Orientation (RO)

040 General dissertations/theses
041 Doctoral dissertations
042 Masters theses
043 Practicum papers
110 Statistical materials
143 Research/technical reports

Interpretation Orientation (IO)

070 Information analyses
071 ERIC information analyses
120 Viewpoints
140 General reports
141 Descriptive reports
142 Evaluative reports

Practice Orientation (PO)

050 General guides
051 Classroom guides for learners
052 Classroom guides for teachers
055 Non-classroom guides for administrators, support staff, etc.
090 Legal/legislative/regulatory materials
160 Tests, evaluation instruments

Pubtypes Not Utilized for Document Grouping

010 Books
020 Collected works
021 Conference proceedings
022 Serials
030 Creative works
060 Historical materials
080 Journal articles
100 Audiovisual materials
130 Reference materials
131 Bibliographies
132 Directories/catalogs
133 Geographic materials
134 Vocabularies/classifications/directories
150 Speeches, conference papers
170 Translations
999 Other/miscellaneous

Table 5. ERIC/EECE Document Population
March 1980 - August 1982

CIJE N = 2,676 (62%)

RIE N = 1,641 (38%)

Document Categories	CIJE File		RIE File		Total	
	N	%	N	%	N	%
Research Orientation	1,687	63.0	645	39.3	2,332	54.0
Interpretation Orientation	821	30.7	534	32.6	1,355	31.4
Practice Orientation	102	3.8	306	18.7	408	9.5
RO-IO Hybrids	41	1.5	77	4.7	118	2.7
RO-PO Hybrids	6	.2	20	1.2	26	.6
Nondiscriminatory Pubtype	19	.7	59	3.6	78	1.8

document to research orientation and one document to practice orientation.

Within each orientation, the ERIC document numbers were grouped by CIJE (ERIC number prefix EJ) and RIE (ERIC number prefix ED) files and in ascending numeric order within the files. This allowed for a proportionate selection of the sample by orientation and by the two ERIC subfiles, CIJE and RIE. A random sample of 100 documents was selected from each orientation, yielding a proportionate sample subset by file.

Sample Selection

A random number between 1 and 20 was picked for sample selection of each orientation. That number was used as the entry point in each subset of the population. Subsequent interval numbers determined by size of the subset yielded 100 sample documents for each orientation. This method produced a sample that approximated the proportional representation of each orientation for CIJE and RIE documents.

These randomly selected ERIC documents were located; the first page of each document and the reference list of the document were xeroxed or copied on a microfiche reader/printer. For those documents that used footnotes for citation throughout the document and did not include a citation list, a reference list was compiled. Each reference list was checked for duplicate citations and, when these were found, they were eliminated. The citations were counted and noted for each document.

Keeping orientation groups distinct, a random sample of 1,000 citations was selected from each group using the same method as that for

selecting the original 300 ERIC document sample. This yielded a total of 3,000 citations. After it was noted that the 25 ERIC documents identified in the sample as practice-oriented documents from the CIJE file yielded only 121 citations, it was necessary to increase the citation sample of this subset to 300. The remaining 77 CIJE practice-oriented documents in the population were located, and an additional 179 citations were randomly selected from this set. This additional pool of citations was included and used only when analysis of the data required a further splintering of the practice orientation CIJE sample.

Data Preparation

The 3,000 randomly selected citations were tagged with ID numbers and entered into a standard 80 character width computer file. Given column limitations of 80 characters, three lines per citation were used. (A codebook is included in Appendix B to further explain column/line and value code allocation to variables.) The three lines were planned so that only numerically coded data appeared on the first line and alphanumeric data on the following two lines.

The data were obtained by counting references for each ERIC document, calculating citation age in years between the publication date of the ERIC document and the publication date of the citation, recording ERIC document length in page count, assigning journal codes to contributing journals indexed by ERIC, assigning codes to the number of ERIC authors and to authors of cited publications, and determining the

document type of the cited work. These data were coded and entered on the first of the three lines allocated to each sampled citation. The second line was used to enter the name of the first author and the title of each cited document. Line three was reserved for editors' names, titles of publications edited, or journal titles and dates. This process accomplished all but the classification of each cited work by discipline, the coding for the manner in which the classification was achieved, and assigning of codes to journal titles that were found in the citation pool.

The data then were sorted by author and title using the SAS PROCSORT program. This identified multiple entries of the same work and avoided duplication of classifications. The same data were sorted by cited journal titles in order to assign code numbers to all journal titles that were found among citations four or more times.

At this point all the citations were classified by discipline and coded. The numeric line for each citation was separated from the main data set, and the classification code, the manner of classification, and the cited journal codes were appended to each line. The data file was proofread, sorted, and printed by author and ERIC number to check for inconsistencies in classification. When doubtful cases appeared, the citation was checked again by inspecting the citing document.

The main data analyses were performed with the numeric data using the SPSS statistical package. The alphanumeric portion of the file contained too many inconsistencies due to variations in author and title entries to be machine searchable without excessive editing. However, after alphanumeric SAS sorts, it was sufficiently clean to facilitate

manual compilations and counting to identify the frequencies of journal titles among citations, the most frequently cited authors, and the most frequently cited works of authors.

The numeric file yielded data on 16 variables for each document. Not all of these variables have been thoroughly analyzed; they were collected to provide data for further studies using the same information. The following list gives those variables on which data were collected:

Independent Variables

(identification tag)

ERIC number

Orientation (Research, Interpretation, Practice)

ERIC file source (CIJE, RIE)

Pubtype (up to three possible for each document)

Length of the ERIC document

Journal title in which ERIC document was published

Number of ERIC document's authors

Publication date of ERIC document

Dependent Variables

Age of citation calculated in years

Reference count for a given ERIC document

Discipline class for each cited work

Manner of classification

Number of authors of the cited work

Code of the cited journal

Publication format of cited work

Publication container code

Classification

In order to classify all the cited documents, a broadly conceived table accommodating both Library of Congress (LC) and Dewey Decimal Classification systems was constructed. Thirty-eight categories were identified, of which two were spinoffs from broader categories. Developmental child psychology, a spinoff from psychology, and elementary and early childhood education, a spinoff from education, were identified to further illuminate discipline dispersion to literature sources supportive of elementary and early childhood education. The Dewey and LC correspondence codes for each discipline are displayed in the Codebook in the Appendix B. These broad categories were used to classify the citations sampled in this study.

For all those documents that could have been cataloged by the University of Illinois libraries on the Urbana-Champaign or Chicago Circle campuses, an online search of LCS was made to identify

classification codes. It should be noted that the Urbana-Champaign campus library uses several editions of the Dewey classification system. The Chicago Circle campus library uses LC classification. The use of both these systems, even in the broader category concept, created consistency problems. Every effort was made to achieve consistency by verifying, comparing, and checking. To facilitate the process, general container codes were added to the data file to distinguish between documents that might have been classified by either of the above-mentioned libraries.

Journal articles, the majority of reports, and other ephemeral literature were classified by the investigator. All possible caution was exercised to avoid errors and maintain consistency with the existing schemes of document classification by University of Illinois at Urbana-Champaign and Chicago Circle campus libraries. Toward this end, a correspondence table accommodating the systems of the two campuses was created. This table can be seen in the Codebook. However, it must be noted that the classification of documents into disciplines by any system is a subjective process, and the possibility of error exists.

The final classification of all referenced documents was achieved through one of five modes. When it was possible that a specific document could have been classified by a University of Illinois library, an LCS online search was made to identify both the Library of Congress and the Dewey Decimal class numbers. These were checked against the correspondence table in the Codebook and, if there was agreement, the document was assigned to one of the identified disciplines (Mode 1 and Mode 2). In cases of conflict, key words in the document title and

context clues in the citing document were checked and the investigator assigned the document to one of the disciplines (Mode 3).

Journal articles and other items not previously classified were assigned to one of the disciplines by the investigator. Because professional literature usually provides a title descriptive of the document content, key words in the title provided the discipline clue. Dewey Decimal classification (19th edition) and the correspondence table were used to assign the documents to a discipline (Mode 4). When the title of the document did not provide sufficient clues, the reference was checked in the context of the citing document and classified as in Mode 4. The document was then assigned to one of the disciplines (Mode 5).

For each document that was classified, a code of the method that yielded the classification was added. As a final check, the numeric file was recombined with the alphanumeric file and resorted into its original format with all of the data in place. It was reread and checked again for appropriateness of classification codes. In cases where a citation was out of logical sequence, an in-context check of the citation was performed again. Only the numeric portion of the data was used to test the hypotheses.

CHAPTER 5

FINDINGS

Central to this research was the possibility of sorting ERIC documents entered in the ERIC document database by the Elementary and Early Childhood Education Clearinghouse from March 1980 through August 1982 into three groups according to the orientation of the intended audience. The three groupings of research-, interpretation-, and practice-oriented documents were achieved by using 18 of the 34 pubtypes that ERIC's indexing process assigns to each document. The 18 pubtypes were selected and divided into three groups corresponding to the 3 orientations intuitively as well as from experience of what document types are retrievable from the database. The remaining 16 pubtypes were considered nondiscriminating for purposes of document grouping. Table 4 shows the separate groups of pubtypes used for document grouping in this study.

Keeping in mind the original limitations of the study (that is, the input of only one clearinghouse and the selection and division of specific pubtypes to identify orientations of intended audience) the findings of this research were used to test the hypotheses at the $\alpha = .05$ significance level.

The remainder of this chapter reports the findings and discusses the descriptive implications for the ERIC database according to the document population retrieved. The subsections of this chapter report: (1) differences and similarities between the citation practices of the orientations; (2) differences and similarities in the age of references

cited by the orientations; and, (3) the extent to which the professional literature of each orientation relies on other professional literature associated with the disciplines of elementary and early childhood education specifically, and education generally.

Summary Findings

The hypotheses as stated were not supported fully by the findings in this study.

1. Research-oriented publications in early childhood education were found to cite less literature than interpretation-oriented publications and more than practice-oriented publications. The mean numbers of citations per document in the orientations are:

research orientation	19.73
interpretation orientation	22.43
practice orientation	12.47

Although the findings were significant with $F.05;\ 2, 297 = 3.115$ when SPSS ONEWAY was applied to the data, Scheffé's more stringent test of differences between groups failed to distinguish between the mean number of citations by orientation.

When median citation ages of the orientations were compared to test whether research-oriented publications cite more recent literature than interpretation and practice-oriented publications, the findings showed that research-oriented publications cite the oldest literature. The median citation ages, measured in years, for the three orientations are:

research orientation	6.29
interpretation orientation	5.78
practice orientation	5.33

The findings are significant with Cochran's C giving X^2 .05; 2 = 11.39i.

When research-oriented publications were compared with interpretation- and practice-oriented publications, the findings showed that research-oriented publications draw more heavily on the literature of other disciplines. Citations classified with disciplines other than elementary and early childhood education are as follows:

research orientation	94.4%
interpretation orientation	93.5%
practice orientation	79.0%

2. When compared to practice-oriented publications, interpretation-oriented publications were found to cite more literature. The mean numbers of citations for the orientations are as follows:

interpretation orientation	22.43
practice orientation	12.47

However, the findings showed that interpretation-oriented publications do not cite more recent literature. The median ages, in years, of documents cited are:

interpretation orientation	5.78
practice orientation	5.33

Interpretation-oriented publications were found to rely more on other disciplines than practice-oriented publications. The reliance, measured in percentages of citations to disciplines other than elementary and early childhood education, are:

interpretation orientation	93.5%
practice orientation	79.0%

Descriptive Implications for the ERIC/EECE Clearinghouse Input

Before proceeding to more detailed analyses of the data collected for this study, the document input by the ERIC Clearinghouse on Elementary and Early Childhood Education during the tested period deserves some comment. As learned through an online search using DIALOG, the EECE Clearinghouse entered 4,317 documents from March 1980 to August 1982. Of these, 2,676 or 62% come from the CIJE file and 1,641 or 38% from the RIE file. In this respect, ERIC/EECE's input closely approximates previous estimates for the database as a whole. Trester (1981) states that, since 1975, only 40% - 45% of ERIC documents are part of the RIE file.

Due to the fortuitous choice of pubtypes, the online search sorted 94.9% of the 4,317 documents from the three orientations. The distribution among the three orientations supports the criticism that the database ill serves the practitioner in the field (Steiger, 1975;

Hull and Wanger, 1972). Fifty-four percent of documents fall in the research orientation, 31.4% in the interpretation orientation and only 9.5% in the practice orientation. The CIJE file contributes 63% of its documents to research orientation and only 3.8% to practice orientation. Table 5 displays these findings for the breakdown by the various subsets of the population.

Although this study covers a time period that is too short to allow any kind of generalization concerning the selection and acquisition policies of this ERIC clearinghouse, the implication is one of a serious document under-representation for practice-oriented audiences. Particularly damning is the representation in the CIJE file, for which each clearinghouse may select appropriate journal titles to index, either cover-to-cover or selectively. The clearinghouse is precluded from selecting or substituting practice-oriented journals only if another clearinghouse already is indexing these journals. If other clearinghouses are indexing elementary and early childhood journal literature, ERIC's coverage of practice-oriented journal literature in elementary and early childhood education may be more balanced. This study, however, would not have revealed this, because the sample documents were selected by clearinghouse input rather than by a specific subject orientation. Nevertheless, the Elementary and Early Childhood Education Clearinghouse may wish to assess the coverage of its practice-oriented journal literaturein items of its scope in the database across a sample that covers a longer time period and includes the input of the other clearinghouses.

The RIE file more evenly represents the three orientations, although this file, too, favors research-oriented documents at the expense of practice-oriented documents. Some of the reasons for this imbalance among orientations and orientation/file subsets may be attributed to unavailability of practice-oriented documents that meet ERIC's criteria for selection. If practice-oriented documents, either in journal literature or among the fugitive documents, fall into the category of undocumented popular literature, they may not meet ERIC standards for contributions to knowledge, significance, relevance to current social and professional problems, innovation, etc., and thus may not be included in the database.

Citation Practices of Documents in Each Orientation

Before examining these broad findings more closely, it should be noted that, because it was decided a priori to randomly select 100 ERIC documents from each orientation population subset, the ratio of sample subset to population is different for each orientation. However, because the CIJE and RIE documents were presorted within each orientation separately, an approximate proportional representation of the files was achieved. Table 6 shows the total number in each population subset (N) and the number of documents used for the sample (n).

As these sampled documents were inspected, differences in citation practice between the three orientations became apparent. All of the research-oriented documents, 75% of the interpretation-oriented

documents, and only 54% of the practice-oriented documents included references. The breakdown of documents with references for the orientations by files is shown in Table 7.

All the available references were pooled for each orientation by file so that when 1,000 references were selected randomly from each orientation for the citation pool, an approximate proportion was retained in the citation sample by file. The distribution of the 5,463 citations found in the 300 ERIC document sample is shown in Table 8.

Of the interpretation- and practice-oriented documents with references, there was a less consistent pattern in the number of references per document, shown in Tables 50 - 54 in Appendix A. These tables display interval scaled reference counts by orientation and file, and by file for each orientation. One document from the RIE file of the interpretation orientation and one document from the RIE file of the practice orientation have unusually high reference counts. Due to this, these two documents could be considered outliers and were removed when making statistical calculations. In these cases, two sets of results are presented in the tables: one in which these documents have been left as part of the sample and one in which they have been removed.

Differences Between Citation Counts of the Orientations

For the sample (n = 300) the mean number of citations is 18.21. The statistical difference between citation counts of the three orientations was found at the $\alpha = .05$ level of significance with $F_{.05;\ 2,\ 297} = 3.115$. However, Scheffé's test at the significance level of .05 failed to find any difference in the means. Table 9 lists statistical findings that include standard deviation and confidence intervals.

Table 6. Document/Document Sample Relationship

	Orientation					
	Research		Interpretation		Practice	
File	N	n	N	n	N	n
CIJE	1,687	72	821	61	102	25
RIE	645	28	534	39	306	75
Total	2,332	100	1,355	100	408	100

N refers to the population

n refers to the sample

Table 7. Proportion of Sampled Documents Containing References

	Orientation					
	Research		Interpretation		Practice	
File	n	%	n	%	n	%
CIJE	72	100	49	80	13	52
RIE	28	100	26	67	41	55

Table 8. Citation/Citation Sample Relationship

File	Orientation					
	Research		Interpretation		Practice	
	N	n	N	n	N	n
CIJE	1,415	719	1,287	550	143	121
RIE	558	281	956	450	1,104	879
Total	1,973	1,000	2,243	1,000	1,247	1,000

N refers to the population

n refers to the sample

Table 9. Citation Count by Orientation
(outliers included)

n = 300

Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.73	12.18	17.31 to 22.15	100
Interpretation	22.43	35.49	15.39 to 29.47	100
Practice	12.47	33.87	5.75 to 19.19	100

The above statistics were obtained using SPSS FREQUENCIES and its analysis of variance package, ONEWAY. The inability to distinguish clearly between the orientations by mean number of citations can be attributed to the fact that also distinguishes these groups: the variance or dispersion in the number of references cited by documents within each orientation. Inspecting the documents, it became obvious that one document in the interpretation orientation and one document in the practice orientation are considerably outside the main pattern of citation. They account for 236 and 309 citations respectively. (See Tables 50 and 54 in Appendix A, which list citation counts on an interval scale.) Removing these outliers lowers the overall mean of the sample to 16.5 citations and produces the statistics shown in Table 10.

When these two cases were removed from the sample, the hypothesis that research and interpretation orientations cite more literature than practice orientation is supported at the $\alpha = .05$ level of significance; however, there was only a small difference between the mean number of citations in research- and interpretation-oriented documents. The ONEWAY SPSS package yielded these statistics: $F.05; 2, 295 = 9.166$. With Scheffé at the .05 significance level, the mean of the practice orientation differed from those of the research and interpretation orientations, but the means of the research and interpretation orientations did not differ.

Removing documents because their citations fall outside the norm, however, has some inherent dangers, given the number of available citations in each orientation/file subset. In the case of the interpretation/RIE file subset, removing one ERIC document from the

Table 10. Citation Count by Orientation
(outliers removed)

n = 298

Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.73	12.18	17.31 to 22.15	100
Interpretation	20.27	28.33	14.62 to 25.92	99
Practice	9.48	15.89	6.31 to 12.64	99

sample of 26 represents the removal of 3.8% of sampled documents, but because that subset contains only 956 citations, removing 236 of these means removing 24.7% of available citations. In the case of the practice orientation/RIE file subset, one document represents only 1.8% of the sample of 55 ERIC documents. However, the 309 citations in the outlier document represent 28% of the 1,104 available citations. The percentage of citations removed from the available citation pool is indeed high, and although they appear as outliers due to the extremely high number of references they contain, it is possible that they should be regarded as yet another subset or a special type of document present in the population.

Differences Between Citation Counts of the Files

When the population was inspected by file--that is, CIJE and RIE contributions by document count--a 62 to 38 ratio was noted. This ratio changed dramatically when the population was sorted by orientations. The respective percentage ratios between CIJE and RIE files obtained from this sort were 72 to 28 for research orientation, 61 to 39 for interpretation orientation and 25 to 75 for practice orientation.

During the random sampling of an equal number of citations from the orientations (1,000 from each orientation), an approximate proportion was maintained between the file ratios within each orientation. However, the sampled citations were no longer representative of the two files as units. Although research-oriented documents represented 54% of the population, they represent 33.3% of the sample, because 100 ERIC documents were selected from the total pool of documents in each

orientation. Although practice-oriented documents represent 9.5% of the population, they also represent 33.3% of the sample.

When a citation sample was randomly selected from the sampled ERIC documents, 1,000 citations were selected from each orientation, maintaining an approximate ratio between CIJE and RIE sample documents within each orientation. However, as long as equal numbers of ERIC documents had been selected from each orientation irrespective of the actual population distribution of documents among the orientation, when citations were selected from these documents, the citation sample also continued to under-represent research orientation citations and over-represent practice orientation citations.

As can be seen, generalizations about citation practice to the population by file or as a whole are impossible. However, data generally are displayed both by file and for the sample as a whole when orientation and orientation/file data are compared. The intent is to illuminate some possible differences between the files, although both files over-represent practice orientation and under-represent research orientation for the population. Tables 11 and 12 display the data on file differences by mean citation counts. Not surprisingly, given the above parameters of the sample, no statistically significant differences were found. The mean numbers of citations without removing the outliers are listed in Table 11.

There is no difference between the number of references in the two files at the $\alpha = .05$ level of significance, although variance shows great disparity. SPSS ONEWAY statistics give $F.05;\ 1,\ 298 = .016$. If the two outliers (both of which are from the RIE file) are removed,

Table 11. Citation Count by CIJE and RIE Files
(outliers included)

n = 300

File	$\bar{x}$	S.D.	C.I.	n
CIJE	18.01	20.84	14.73 to 21.28	158
RIE	18.44	36.72	12.35 to 24.53	142

Table 12. Citation Count by CIJE and RIE Files
(outliers removed)

n = 298

File	$\bar{x}$	S.D.	C.I.	n
CIJE	18.01	20.84	14.73 to 21.28	158
RIE	14.81	20.16	11.44 to 18.18	140

there is still no statistical difference between the mean number of citations in the two files at the $\alpha = .05$ level of significance. SPSS statistical package ONEWAY gives F.05; 1, 296 = 1.804. Table 12 shows these findings.

Citation Count by Orientation/File Subsets

Statistical analysis of variance was performed on orientation by file, first using 300 ERIC documents, and then removing the two outliers and using 298 documents. SPSS program ANOVA yielded the findings shown in Tables 13 and 14. When the three orientations were analyzed by file (300) cases, there was no statistical difference between the means; F.05; 5, 294 = 1.663 was not significant. With the two outliers removed, there was a statistically significant difference; F.05; 5, 292 = 3.936. Scheffé's test, however, failed to differentiate between the means at the .05 level of significance.

The analysis of variance between the orientations, using a sample of 300 ERIC documents, showed statistically significant differences. At the $\alpha = .05$ significance level, the mean number of citations was highest for the interpretation orientation, followed by the research orientation; practice-oriented documents have the lowest number of citations. However, given the respective confidence intervals, the findings also indicated that the means may not hold up to more stringent tests. When Scheffé's test was applied, there was no difference between the three orientations at the $\alpha = .05$ significance level. Homogeneity of variance in number of citations between orientations was also tested. This was significant at the $\alpha = .05$ level, thus rendering the previously found differences between the orientations suspect.

Table 13. Citation Count by Orientation/File Subsets
(outliers included)

n = 300

	CIJE			
Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.65	11.05	17.06 to 22.25	72
Interpretation	21.10	29.72	13.49 to 28.71	61
Practice	5.72	9.01	2.00 to 9.44	25

	RIE			
Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.93	14.94	14.14 to 25.72	28
Interpretation	24.51	43.36	10.46 to 38.57	39
Practice	14.72	38.57	5.85 to 23.60	75

Table 14. Citation Count by Orientation/File Subsets
(outliers removed)

n = 298

	CIJE			
Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.65	11.05	17.06 to 22.25	72
Interpretation	21.10	29.72	13.49 to 28.71	61
Practice	5.72	9.01	2.00 to 9.44	25

	RIE			
Orientation	$\bar{x}$	S.D.	C.I.	n
Research	19.93	14.94	14.14 to 25.72	28
Interpretation	18.95	26.27	10.31 to 27.58	38
Practice	10.74	17.49	6.69 to 14.80	74

Removing the two ERIC documents with extremely high citation counts from the sample lowered the mean citation count for the interpretation and practice-oriented documents, but only for practice orientation were the confidence intervals sufficiently strengthened that Scheffe's test could find it significantly different from the other two orientations. Research- and interpretation-oriented documents were not significantly different at the $\alpha = .05$ level. The homogeneity of variance test is significant, thus rendering these findings suspect as well. It appears that, due to the high variance, extent of citation cannot conclusively differentiate between the three orientations at the $\alpha = .05$ level of significance.

Further dividing of the orientations between their file subsets for the 300 ERIC document sample yielded mean citation numbers that fail to meet the $\alpha = .05$ significance level for differences. When the outliers were removed, ANOVA found a significant difference, but Scheffe's test failed to differentiate between the groups. The homogeneity of variance test was significant at the $\alpha = .05$ level and further renders the findings suspect. Again, due to the high level of variance, it is impossible to conclusively differentiate between the orientation/file subsets.

Estimates of Citation Count by Document Length

During the process of randomly selecting citations from ERIC documents, it was noted that RIE documents were longer, although the majority were reproductions of typed pages (thus containing fewer words per page than the typeset pages of journal articles). Nevertheless

data on ERIC document length were collected and from these the following calculations of number of citations per page were derived.

The total number of pages in the sample was 12,930 and the total pool of references was 5,463. This yielded a mean of 0.4 references per page. The mean of 0.4 references per page cannot be considered seriously because 11,582 of these pages come from the RIE subfile and are not comparable in word density to the 1,348 CIJE subfile pages, which are typeset journal pages. However, if one assumes that a typed page averages 250 words and journal pages average approximately 750 words, a rough estimate of comparable reference count per page can be derived. Tables 15-17 display these comparisons by orientation, file, and orientation/file subsets.

The number of citations per page for each orientation does not differentiate between research- and interpretation-oriented documents if no correction for word density is made. When RIE document length was equalized to CIJE document length at a ratio of 3:1, interpretation-oriented documents were shown to cite more than research-oriented documents; practice-oriented documents cited considerably less than either of the other two. However, the more striking result of this analysis (although not generalizable, suggestive of further investigation) is the difference between the number of citations in the CIJE and RIE subfiles. The fugitive documents from the RIE subfile appear to cite less, whether a correction for word density is employed or not.

This analysis confirmed the previous findings of analysis of variance with ONEWAY. The number of citations differentiated the

Table 15. Citation Count by Orientations Using Document Length Estimates

n = 300 (n = 298)

	Orientation				
	Research	Interpretation		Practice	
Number of Citations	1,973	2,243	(2,007)	1,247	(938)
Number of pages	2,242	2,441	(2,276)	8,247	(7,880)
x citations/page	.9	.9	(.9)	.2	(.1)
x citations/page corrected for word density [a]	1.6	2.0	(1.8)	.4	(.3)

Figures in parentheses represent calculations with outliers removed.

[a] In the case of the RIE subfile, the total page count for that subset is divided by three to compensate for word density in the CIJE file. The assumption is that three typed pages in RIE constitute one typeset page in CIJE.

Table 16. Citation Count by CIJE and RIE Files
Using Document Length Estimates

n = 300 (n = 298)

	File		
	CIJE	RIE	
Number of citations	2,845	2,618	(2,073)
Number of pages	1,348	11,582	(11,050)
x citations/page	2.1	.2	(.2)
x citations/page corrected for word density[a]	2.1	.7	(.6)

Figures in parentheses represent calculations with outliers removed.

[a] In the case of the RIE subfile, the total page count for that subset is divided by three to compensate for word density in the CIJE file. The assumption is that three typed pages in RIE constitute one typeset page in CIJE.

Table 17. Citation Count by Orientation/File Subsets Using Document Length Estimates

n = 300 (n = 298)

	Orientation					
	Research		Interpretation		Practice	
	CIJE	RIE	CIJE	RIE	CIJE	RIE
Number of Citations	1,415	558	1,287	956 (720)	143	1,104 (795)
Number of pages	728	1,514	491	1,950 (1,785)	129	8,118 (7,751)
$\bar{x}$ citations/page	1.9	.4	2.6	.5 (.4)	1.1	.1 (.1)
$\bar{x}$ citations/page corrected for word density [a]	1.9	1.1	2.6	1.5 (1.2)	1.1	.4 (.3)

Figures in parentheses represent calculations with outliers removed.

[a] In the case of the RIE subfile, the total page count for that subset is divided by three to compensate for word density in the CIJE file. The assumption is that three typed pages in RIE constitute one typeset page in CIJE.

orientations, although the direction was not uniformly that which was hypothesized before the data were gathered and analyzed.

Concluding Remarks on Citation Practice

If scholarship in a field is judged by the extent to which publications cite previous works, there is a clear indication that, as a whole, research-oriented documents are more scholarly than interpretation-oriented documents, which, in turn, are more scholarly than practice-oriented documents. One-hundred percent of research-oriented documents, 75% of interpretation-oriented documents, and only 54% of practice-oriented documents contain citations. However, when these citations are averaged across the documents, interpretation-oriented documents cite more than research-oriented documents and practice-oriented documents cite the least. Among the interpretation-oriented documents, those in the CIJE file appear more scholarly than those in the fugitive document file (80% of the former and 67% of the latter use citations). Of the practice-oriented documents, 55% in the RIE file and 52% in the CIJE file contain citations.

The grouping of documents by orientation was conceived as reflecting the needs and preferences of those for whom the document was intended. If, in fact, the practitioner/teacher in the field is not reassured by credit given to previous practice reports or even feels burdened by citations, the high percentage of undocumented writing in the field may be a true reflection of communication with an intended audience. Research-oriented documents, if intended primarily for researchers,

would have little credibility with that group if they omitted references. Interpretation-oriented documents could have different intents, although this study made no provision for testing such a supposition. However, because interpretation implies synthesis and summarization, it is perhaps not surprizing that heavy use is made of citations. It is also conceivable, however, that some interpretation-oriented documents were intended to interpret and/or summarize research for researchers, although others were intended to interpret and summarize practice for practitioners which, in the latter case, would account for some of the undocumented interpretation-oriented literature.

It is difficult to imagine that authors would try to influence the reception of their writing by deciding to exclude or include references. It seems more plausible to assume that the field of education affords opportunities to communicate the outcomes of projects or spontaneous activities that were not planned seriously or set up according to experimental methods. Reporting of such activities, although lacking the formal aspects of scholarship, enriches the practitioners' lore. Examples of such cases were found among the indexed items of such publications as the Instructor, in which, for example, "how to" holiday art activities for the classroom are reported. In fact, such communications would lose their colorful appeal if they tried to deal with the theoretical aspects of teaching art to young children.

Citation practices of documents in the three orientations were analyzed using two methods. The more commonly employed practice of estimating the mean number of citations per document showed a difference

between the orientations and no difference when the orientations were divided between the CIJE and RIE subfiles for the sample of 300 ERIC documents. The means failed to differentiate the orientations when more stringent tests were applied because of overlapping confidence intervals. Research-oriented documents, in spite of the fact that 100% of them used citations, consistently showed a lower mean number of citations than interpretation-oriented documents, even when subdivided by RIE and CIJE subfiles. This clearly showed that, when interpretation-oriented documents credited previous work, they did so very extensively. The explanation may rest on the assumption that such documents are review articles that assess and report findings in some subfield or subject area. A scan of ERIC documents confirmed this, especially for those published as journal literature. Those documents that fail to cite other works were categorized as 'viewpoint' writing, some as descriptive reports, and some as general reports. The 'viewpoint' writing can be categorized as ex cathedra communication by someone who might otherwise credit the work of others. Where citations are lacking in reports, one is tempted to ascribe this to carelessness or neglect. Practice-oriented documents that fail to cite have been mentioned above in the case of Instructor articles; however, curriculum-oriented documents would benefit greatly by citing previous results of practice.

The findings on the mean number of citations per document did not support this researcher's intuition about citation practice in research-oriented documents. However, the alternative method of assessing mean number of citations, as reflected by document length

measured in pages, confirmed those findings. This analysis, of course, was not precise, given that the RIE file contains documents that are primarily reproduced typewritten pages, and the CIJE file contains primarily printed journal articles. Additionally, RIE file documents usually place tables and figures on separate pages, but in CIJE file documents these are frequently reproduced and included on the written page. Word density per page varies from journal to journal as well. Nevertheless, the findings from this analysis appear to compensate for the disparity in document length, as attested by the slight differences shown when two very long and highly referenced works are considered as part of the sample and when they are removed. The most noteworthy finding of this second method was the clear difference between documents in the CIJE and RIE subfiles in mean citation per page within each orientation. In each instance, the CIJE subfile documents were found to cite more than RIE documents within a given orientation.

The second method confirmed that interpretation-oriented documents cite more than research-oriented documents and that practice-oriented documents cite least. If a greater number of citations attests to scholarship, then the tentative findings in the CIJE subfile show that refereed journal literature tends to be more scholarly than other forms of literature.

Mean and Median Citation Age

The hypotheses state that (1) compared to interpretation- and practice-oriented publications, research-oriented publications in

elementary and early childhood education cite more recent literature; (2) compared to practice-oriented publications, the interpretation-oriented publications cite more recent literature.

The common practice in bibliometrics is to refer to median citation age, defined as that point, going back from present to past, at which one-half of the use is accounted for. For statistical inference, means were calculated; reported median citation age is always lower than the mean citation age. This implies a consistent positive skew in the sampled distribution of the population as a whole and in its subsets.

Citation Age by Orientation

The mean and median citation ages for the sample set as a whole are as follows:

Mean = 8.43

Median = 6.00

The hypotheses are not supported if citation age is determined by either the mean or the median. The practice orientation uses the most recent citations, followed by interpretation orientation; the research orientation cites the oldest documents. SPSS statistical package ONEWAY testing of the mean citation age found it significant at F.05; 2, 2997 = 10.423. The Scheffé's procedure failed to distinguish between research and interpretation orientation at the $\alpha = .05$ level of significance. The discrepancy between mean and median citation ages approximates three years for research and interpretation orientations and two years for practice orientation. Table 18 displays the

Table 18. Citation Age by Orientations

n = 3,000

Orientation	$\bar{x}$	Mdn	S.D.	C.I.	n
Research	9.18	6.29	9.70	8.47 to 9.78	1,000
Interpretation	8.73	5.78	10.20	8.10 to 9.36	1,000
Practice	7.37	5.33	7.46	6.91 to 7.84	1,000

differences in mean and median citation ages for the orientations.

The median citation ages are lower than the mean citation ages for all three orientations. However, there is 0.5 years difference between research-oriented documents and interpretation-oriented documents when both the mean and the median are assessed. There is also a 0.5 year difference between the median citation ages of interpretation-oriented documents and practice-oriented documents; the mean citation age difference between interpretation-oriented documents and practice-oriented documents is 1.3 years. The positive skew implies that the older citations have raised the mean citation age.

'Recent literature', however, is a relative concept. Price (1970) and Meadows (1974) regard recent literature as that which has been published in the previous five years. Their conclusions stem primarily from studies of journal literature and calculations of logarithmic decay curves for the use of recent and archival literature available for citation. Recent literature is affected by a factor that Price (1965) calls the immediacy effect and reflects the existence of both ephemeral papers and classical papers (those that will stand the test of time and continue to be cited). Price was able to calculate the proportions of citations to recent literature and to archival literature and, consequently, to define a research front. Price (1970) defines the research front as that group of papers in which a large proportion of all citations is made to literature published in the preceding five years. For all fields, Price found that approximately 50% of citations are to literature published in the last five years. This varies for different subject fields and is as high as 60% - 70% for physics.

Meadows (1974) indicates that for social sciences it is closer to 40%.

Line (1979), in his analysis of social sciences, studied decay rates of references in journal literature and monographs. His time division between recent and archival literature was references published from 1964 through 1971 and pre-1964. Although his findings identified education specifically, the 'recent literature' is for citations published in the past seven years. For education, Line found that 59% of citations found in journal literature is published from 1964 through 1971 (i.e., recent) and 64% of citations found in monographs is published from 1964 through 1971.

The data gathered for this study allowed a comparable assessment. Tables 55 - 59 display ages of citations on two-year interval scales and give percentages of citations from orientations, file, and orientation/file subsets for each two-year period.

Using Price's and Meadows' five year time interval to identify recent literature, the findings for orientations show the following percentages of citations published in the past five years (Table 55):

Research orientation	44.9%
Interpretation orientation	47.9%
Practice orientation	49.5%

These data show that, for all three orientations, the proportion of citations going to the recent literature is similar to the findings indicated for social sciences by Meadows. However, the proportion of practice orientation citations to recent literature is larger than those

of the research and interpretation orientations. The lowest proportion is that of research orientation. This confirms the findings of mean and median citation ages.

Inspecting the data for citations published in the past seven years, the findings for orientations show:

Research orientation	58.4%
Interpretation orientation	61.7%
Practice orientation	64.5%

These findings further confirm that practice-oriented documents cite the largest proportion of recent literature. Line (1979) gives percentages of citations published in the past seven years separately for journal articles and monographs as 59% and 64%, respectively. Documents grouped by the three orientations include both journal articles and fugitive ERIC documents and, therefore, exact comparison is not possible for this grouping of data; however, the implication is that research-oriented documents fall below the findings for the data analyzed by Line.

Table 55 permits the reading of percentages of citations that are 24 years old or older. References that are this old are on the extreme end of what Price call archival literature and might be considered classics for a subject field. The findings of percentages of citation to literature 24 years old or older by the three orientations are as follows:

Research orientation	7.1%
Interpretation orientation	6.4%
Practice orientation	4.4%

This finding leads to speculation as to whether a historical perspective is more important for research-oriented documents than for practice- or interpretation-oriented documents.

Figure 1 displays percentages of citations on an interval scale of two years. The curve for the three orientations is very similar, although the differences in proportion of citations to literature 0 - 1 and 2 - 3 years old is noteworthy for the three orientations. It would appear that practice-oriented documents are more likely to cite 2 - 3 year old literature than documents in the other two orientations.

Citation Age by CIJE and RIE Files

Analysis of mean and median citation ages by file, (Table 19) showed that CIJE literature sources are significantly older than those of the RIE file. This finding is only suggestive and cannot be generalized to the population.

ONEWAY analysis of variance for the mean citation age at the $\alpha = .05$ significance level showed that CIJE literature sources cite older sources ($F.05; 1, 2998 = 28.6512$). Scheffe's test distinguishes between the two groups at $\alpha = .05$ level of significance. The median citation age is lower for both groups, although the difference between the mean and median citation age is greater for the CIJE file.

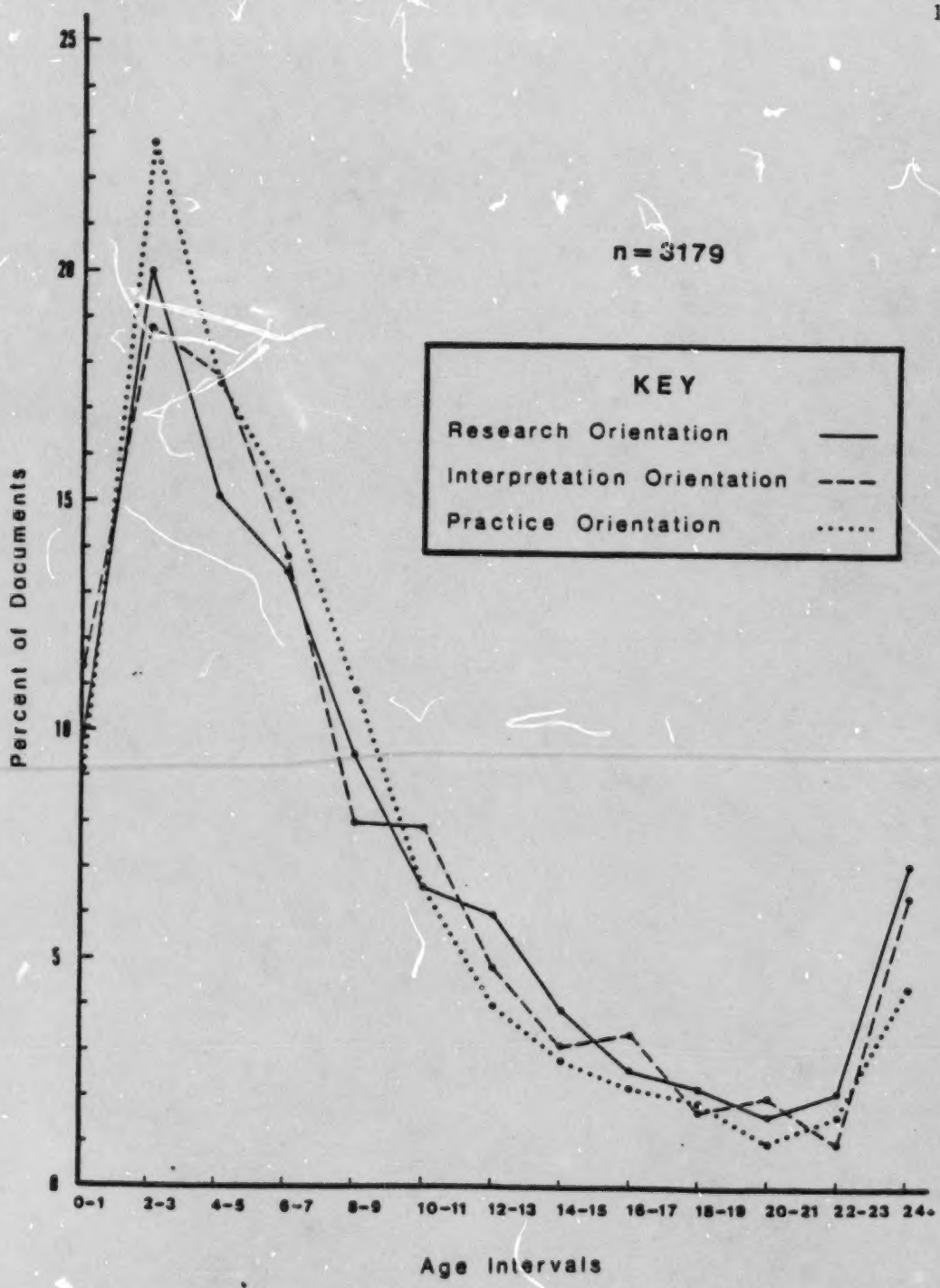

Figure 1. Citation ages by orientations

Table 19. Citation Age by CIJE and RIE Files

n = 3,000

File	$\bar{x}$	Mdn	S.D.	C.I.	n
CIJE	9.39	6.43	9.79	8.88 to 9.91	1,390
RIE	7.59	5.23	8.62	7.17 to 8.01	1,610

File differences in citation proportions to recently cited literature show that CIJE file documents have proportionately fewer citations to literature five or fewer years old than RIE documents. The following data are extracted from Table 56:

CIJE file	42.8%
RIE file	52.3%

The percentages for both files fall within the range that Meadows indicated for social sciences.

Extracting data for the seven-year period shows the same trend between the two files with CIJE documents citing fewer sources from recent literature than RIE documents:

CIJE file	57.0%
RIE file	66.4%

Line (1979), in his analysis of citation age in education journal literature, found 59% of citations published in the past seven years. The findings in this study indicate a slightly lower percentage for the citations found in CIJE literature. If citing from recent literature implies a research front orientation, the CIJE literature exhibits fewer scholarly characteristics in this respect than does the RIE literature. A more plausible explanation, however, is that delay associated with publishing in refereed journals makes it unlikely that very recent material can be cited, a situation less likely to apply to the more fugitive RIE reports.

Cited literature that has clearly passed the test of time and continues to be cited (24 years old or older) is cited proportionately more in the CIJE file, implying a greater historical perspective for journal articles.

CIJE file	7.2%
RIE file	4.6%

Figure 2 presents the data displayed in Table 56. In this figure, the high proportion of citations to the more recent literature by the RIE file documents can be seen clearly. There is also a definite reversal in the proportion of citations to literature 10 years old or older; CIJE documents give proportionately more citations than do RIE documents.

Figure 3 displays orientation differences of citation age on the interval scale for CIJE file documents. The three orientations exhibit a surprisingly uniform curve in the publication ages of cited documents. Figure 4 displays orientation file differences of citation age on the interval scale of RIE file documents. The variation here is more dramatic for the proportion of citations to the more recent literature and exhibits less overall uniformity than that for the CIJE file.

Citation Age by Orientation/File Subsets

The clear difference between the mean citation ages of the files was lost when files were created by orientation subsets. The Scheffé procedure found no difference at the $\alpha = .05$ level of significance, although the ONEWAY analysis of variance found the difference significant ($F.05; 5, 2994 = 7.115$). These differences are exceedingly

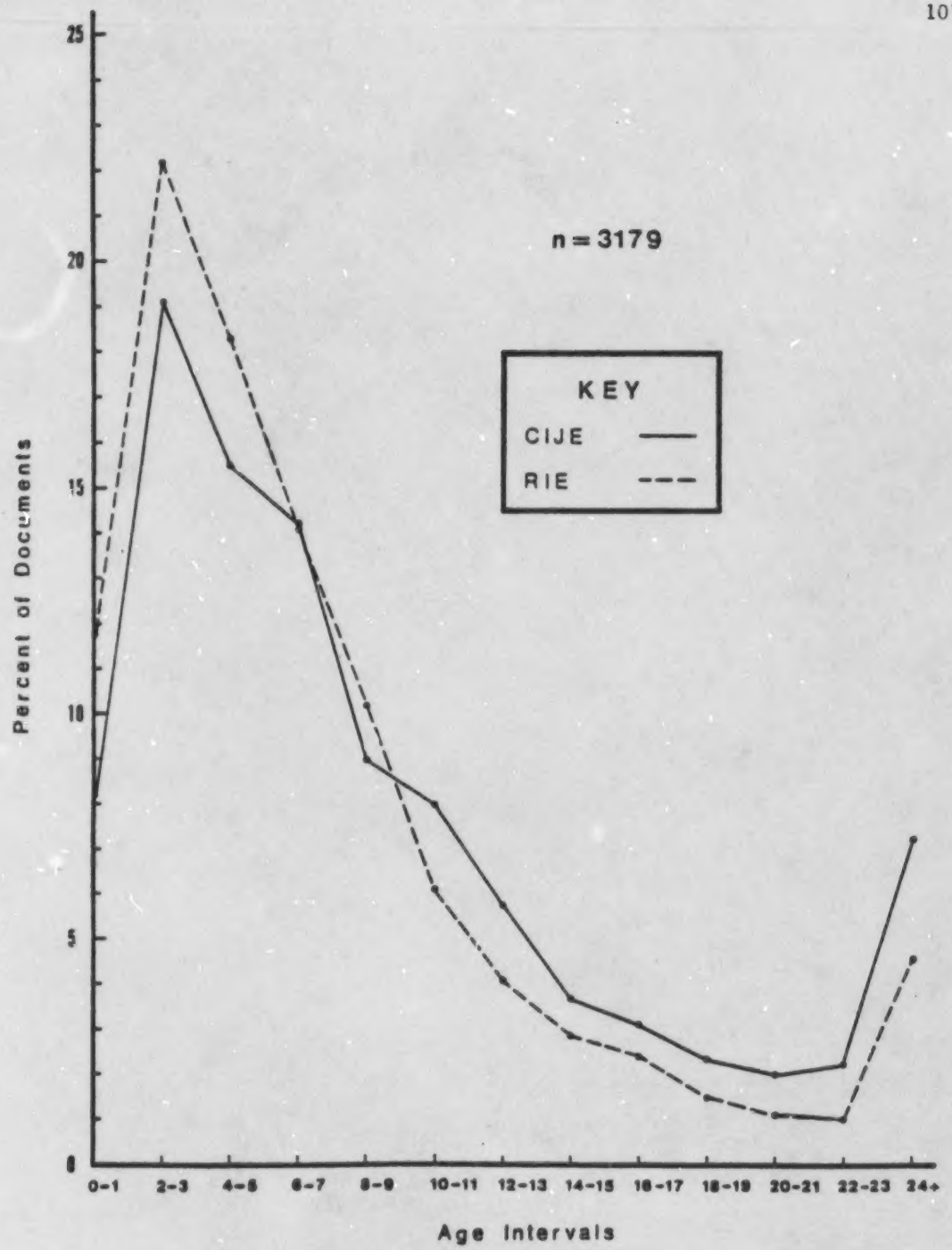

Figure 2. Citation ages of CIJE and RIE files

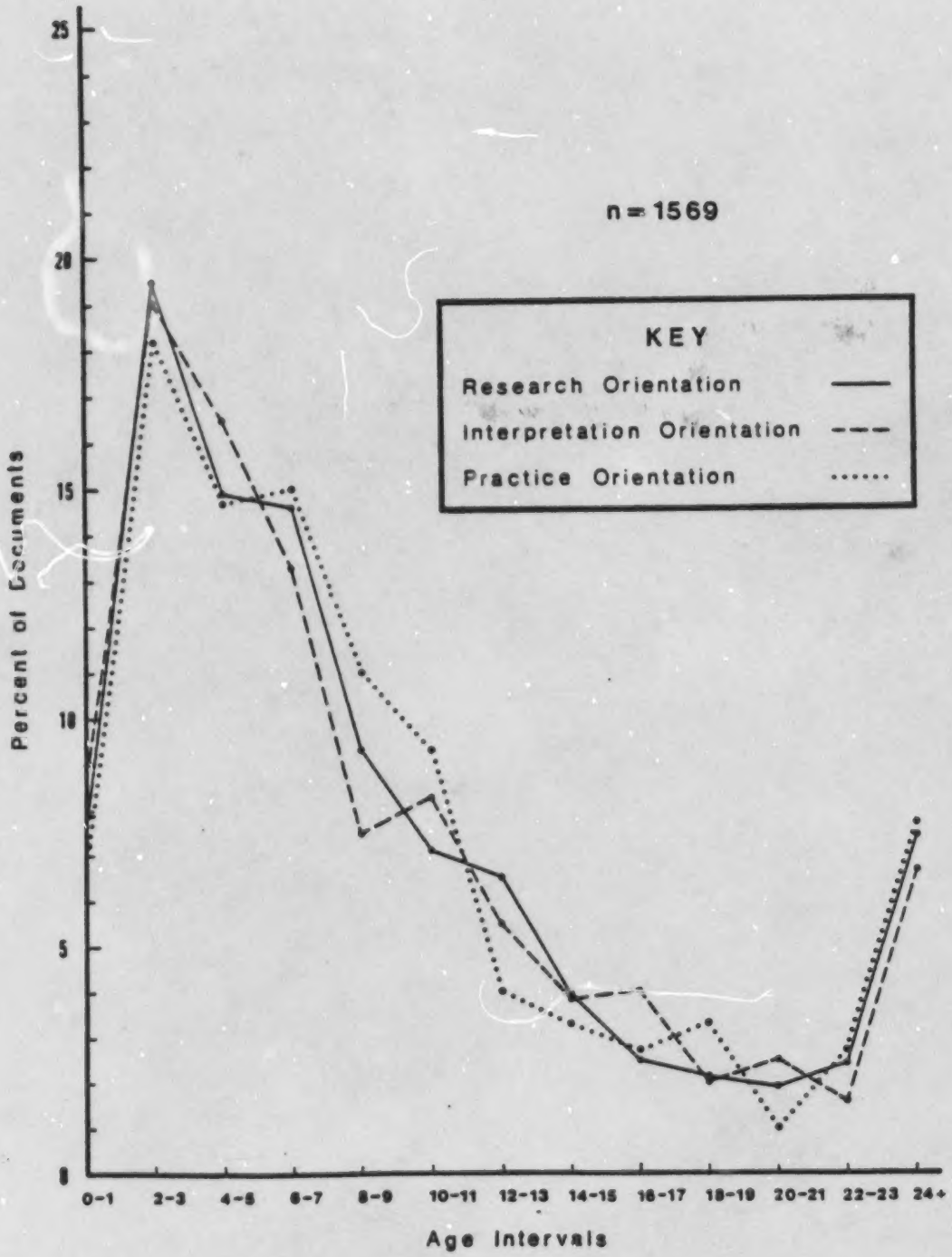

Figure 3. CIJE file citation ages by orientation

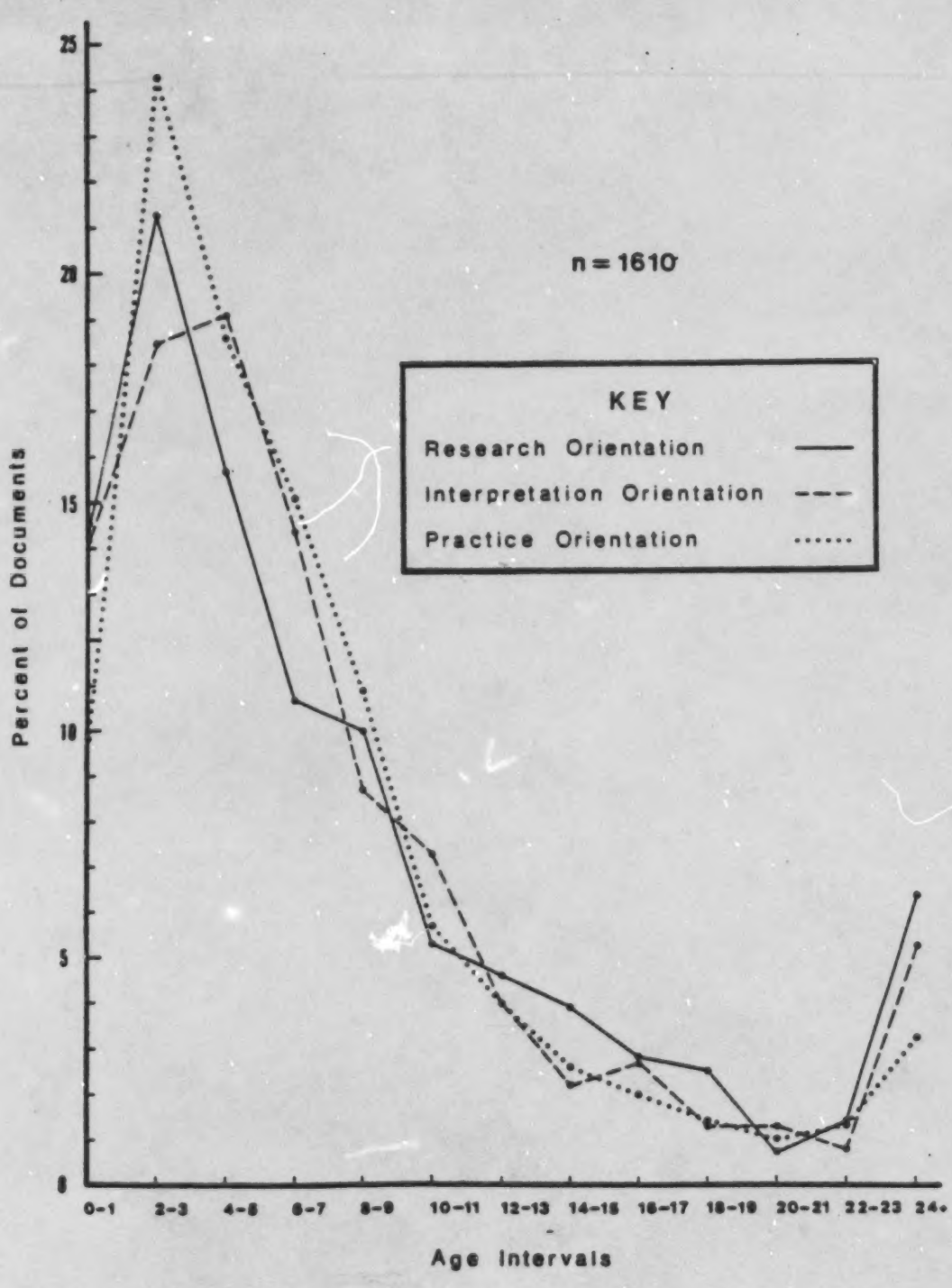

Figure 4. RIE file citation ages by orientation

small; Table 20, using rounded figures, shows no difference between the orientations in the CIJE file. A brief inspection of the confidence interval data clearly indicates that the variances in each subset are very large.

In order to test the significance of the medians, the SPSS nonparametric test MEDIAN (Cochran's C test) was employed. The test is basically an application of the chi square test of independence. The finding for differences between citation ages of the orientations is χ^2 .05; 2 = 11.391. The finding for differences between median citation ages of the files is χ^2 .05; 1 = 19.576. When the median citation age is assessed for orientation/file subsets χ^2 .05; 5 = 22.272. The findings are significant for median ages by orientation, by file, and by orientation/file subsets.

The median test is not a particularly stringent test, as shown by the rounded median citation ages in Table 20. These ages are quite similar, although they indicate substantial differences between the files within each orientation. It appears that the RIE file documents tend to cite more recent literature, irrespective of the orientations. A possible explanation for the difference is that, rather than crediting older works, there is a longer time-lapse between the writing (i.e., citing) date and the publication date of CIJE documents. If this assessment is correct, it confirms one of ERIC's strengths: making professional literature available to the public sooner than conventional print media.

Tables 57 - 59 give interval scale citation ages for the file subsets of each orientation. For all three orientations, RIE file items

Table 20. Citation Age by Orientation/File Subsets

n = 3,000

	CIJE				
Orientation	$\bar{x}$	Mdn	S.D.	C.I.	n
Research	9.39	6.55	9.32	8.70 to 10.07	719
Interpretation	9.39	6.21	10.36	8.52 to 10.25	550
Practice	9.45	6.31	9.95	7.66 to 11.24	121

	RIE				
Orientation	$\bar{x}$	Mdn	S.D.	C.I.	n
Research	8.64	5.29	10.59	7.39 to 9.88	281
Interpretation	7.92	5.31	9.95	7.00 to 8.85	450
Practice	7.09	5.17	7.01	6.62 to 7.55	879

cite proportionately more recent literature and include lower proportions of citations to literature 24 years old or older than CIJE documents.

Citations published in the last five years and identified as a proportion for each orientation file subset are as follows:

Research	CIJE file	42.3%	RIE file 51.6%
Interpretation	CIJE file	44.7%	RIE file 51.8%
Practice	CIJE file	40.0%	RIE file 52.7%

In all six orientation/file subsets, the percentages of citations to recent literature fall within Meadows' identified range for social sciences, but those for the RIE file are substantially higher than those for the CIJE file.

Citations published in the last seven years and identified as a proportion for each orientation/file subset are as follows:

Research	CIJE file	56.9%	RIE file 62.3%
Interpretation	CIJE file	58.0%	RIE file 66.2%
Practice	CIJE file	55.0%	RIE file 67.8%

The CIJE documents in this study show somewhat lower citation proportions to literature published in the last seven years than the 59% found by Line's educational journal literature.

Citations to literature 24 years old or older are as follows:

Research	CIJE file	7.4%	RIE file 6.4%
Interpretation	CIJE file	6.7%	RIE file 5.3%
Practice	CIJE file	7.7%	RIE file 3.3%

The older literature is cited proportionately more in the CIJE file for all three orientations, with the practice orientation exhibiting the highest proportion. Figures 5 - 7 present citation ages for each orientation by file on an interval scale. Note that the oldest or classical literature plays a greater role as a citation source for CIJE documents than for RIE documents. In all three orientations, the immediacy effect or research front appears to be more pronounced for RIE documents; however, as discussed above, this could be accounted for by the time lag between writing and publication of CIJE documents. The comparatively higher percentage of older citations in the CIJE file suggests that journal literature may be more careful in crediting older works in order to build a historical perspective in current writing.

Citation Age of Literature Sources by Publication Format

When analyzing citation age, it seemed appropriate to distinguish between the various publication formats that have provided sources supportive of elementary and early childhood literature. Seventeen distinct format types were identified; they are listed in the Codebook in the Appendix B.

In order to analyze citation age by publication formats, a rank ordered frequency distribution of the formats was prepared for the data set, which numbers 3,179 citations and was derived from 377 ERIC

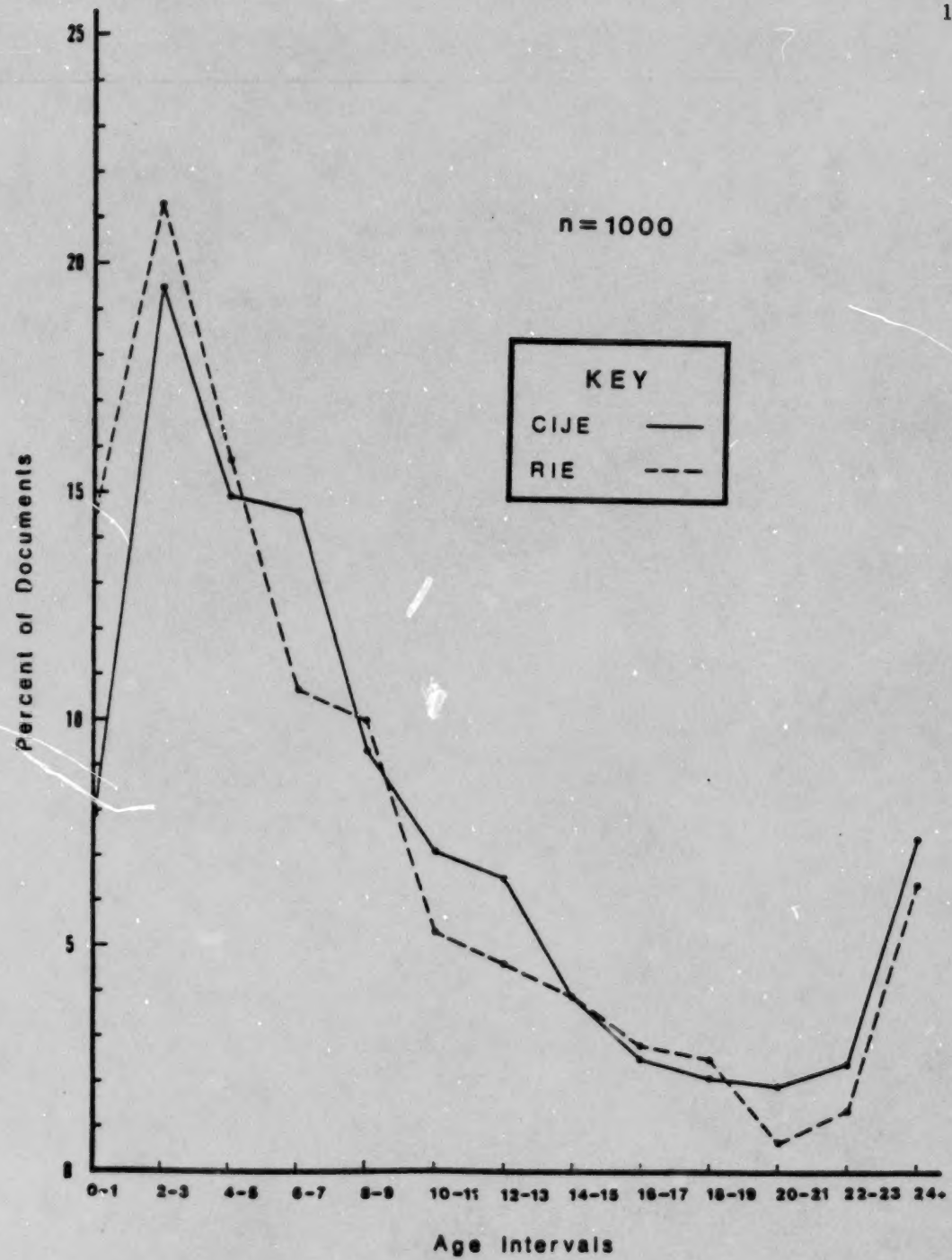

Figure 5. Research orientation citation age by file

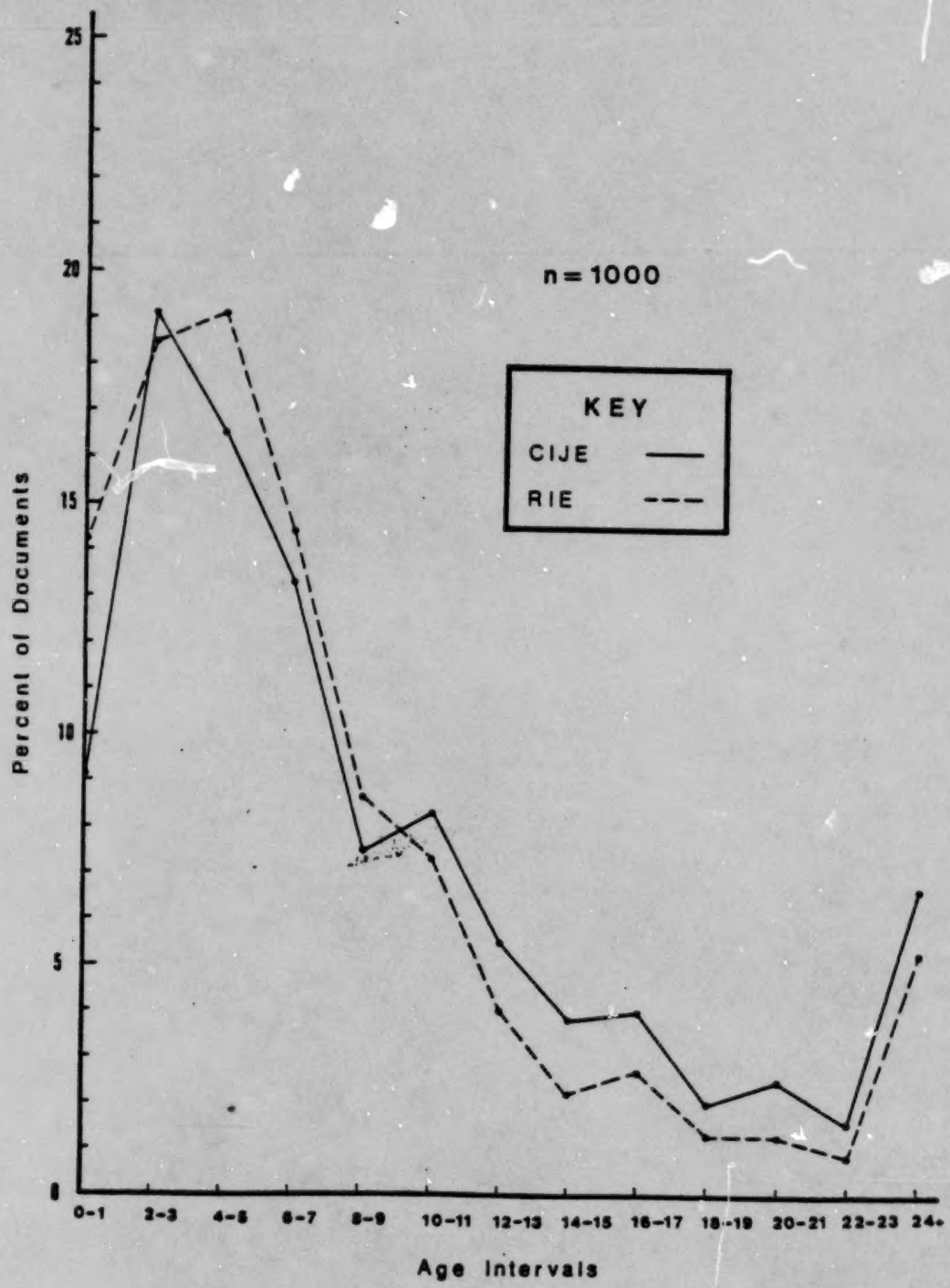

Figure 6. Interpretation orientation citation age by file

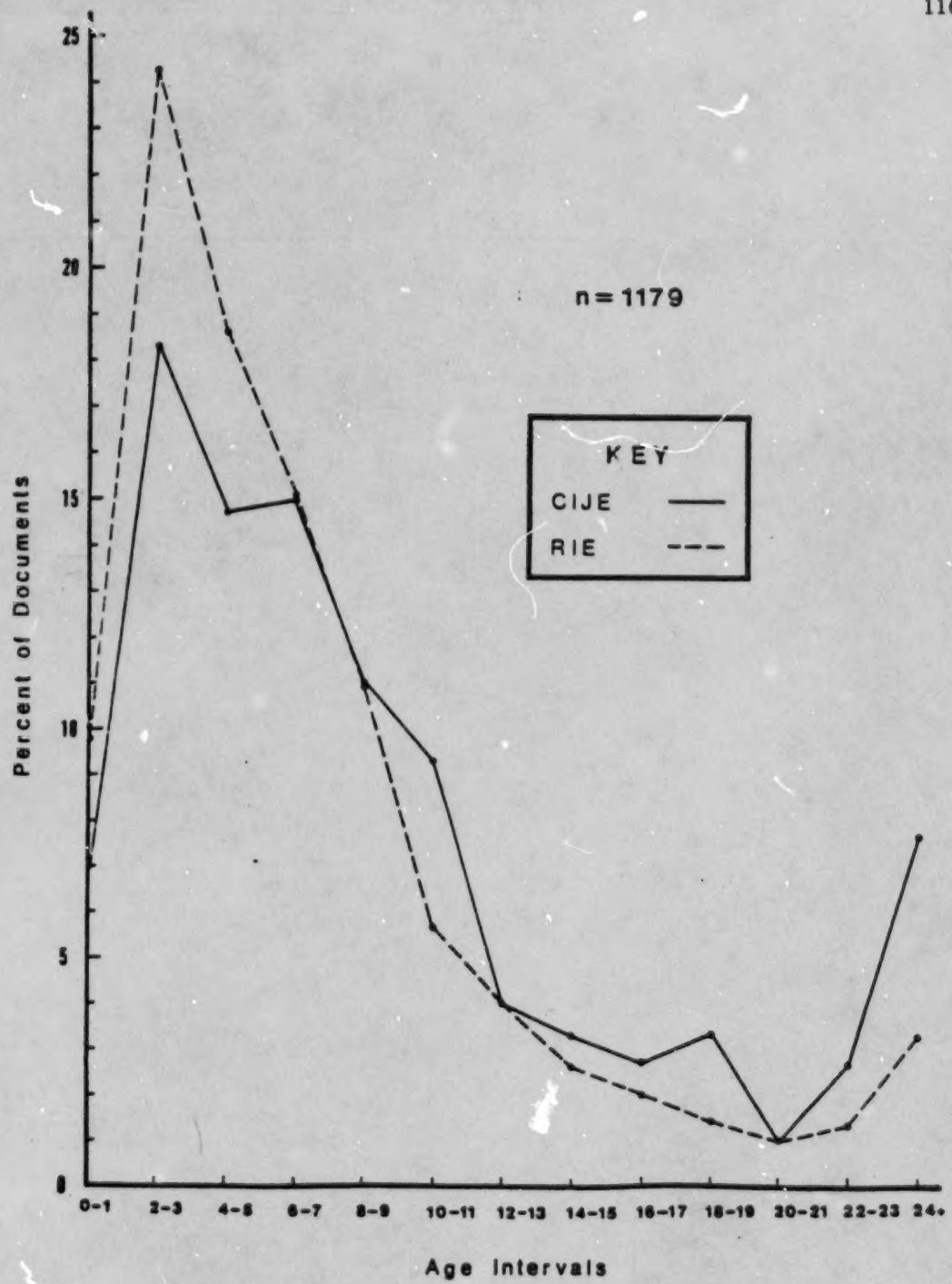

Figure 7. Practice orientation citation age by file

documents (Table 21). Note that the first four formats account for 91.5% of all references.

As Table 22 shows, there is little difference between the top five ranks in the orientation/file subsets. Journals and monographs received ranks 1 and 2, respectively, except within the practice orientation, where the order is reversed.

Because over 90% of references are accounted for by the top four ranked publication formats, mean and median citation ages by orientation, files and orientation/file subsets were calculated only for journal articles, books/monographs, part of collected work, and reports. A fifth group called 'others' includes those publication formats not accounted for in the first four groups. Table 23 displays the mean and median citation ages of the major publication formats in the sample. An assessment of citation age of these major publication formats indicated that there are significant differences between the formats. ONEWAY SPSS analyses of variance found $F.05; 4, 2995 = 28.699$. Scheffé's procedure, however, recognized only three groups with a statistical significance of .05, identifying monographs, but failing to distinguish between journal articles and 'parts of collected works'. Scheffé's procedure did not distinguish between reports and the group classed as 'other'.

Citation Age of Publication Formats by Orientation.

Because disparity in citation ages exists between the major publication formats, and different orientations vary in the percentage of each format for their reference pool, citation age differences were assessed by format for each orientation. Table 24 shows the percentages of each major publication format by orientation. For this data set, ANOVA in a

Table 21. Publication Formats of Citations

n = 3,179

Publication Format	Abs. Freq.	Freq. Count %	Cum. Freq. %
Journal Articles	1243	39.1	39.1
Books/Monographs	1097	34.5	73.6
Part of Collected Works	331	10.4	84.0
Reports	239	7.5	91.5
Speeches/ Conference Papers	63	2.0	93.5
Serials (other than journals)	52	1.6	95.1
Unpublished Manuscripts	35	1.1	96.2
Dissertations	27	.8	97.0
ERIC Documents	24	.8	97.8
Conference Proceedings	22	.7	98.5
Newspaper Articles	10	.3	98.8
Tests/Evaluation Materials	9	.3	99.1
Theses	9	.3	99.4
Guides	7	.2	99.6
Personal Communications	6	.2	99.8
A-V Materials	3	.1	99.9
Legislative Materials	2	.1	100.0

Table 22. Rank Order of Publication Formats

n = 3,179

Publication Format	Entire Data Set	Orientation: Research — Data Subset	Research — CIJE	Research — RIE	Interpretation — Data Subset	Interpretation — CIJE	Interpretation — RIE	Practice — Data Subset	Practice — CIJE	Practice — RIE
Journal Articles	1	1	1	1	1	1	1	2	2	2
Books/Monographs	2	2	2	2	2	2	2	1	1	1
Part of Collected Works	3	3	3	4	3	3	3	4	3	4
Reports	4	4	7	3	4	4	4	3	4	3
Speeches/ Conference Papers	5	5	4	5	5	5	6	7	7	7
Serials (other than journals	6	8	5.5	10	7.5	6.5	12	5	5	5
Unpublished Manuscripts	7	7	8	6	7.5	6.5	12	8	10.5	8
Dissertations	8	6	5.5	7	9.5	8	12	11.5	7	
ERIC Documents	9	11		9	11.5		7	6	7	6
Conference Proceedings	10	9	9		6	11	5	15		13
Newspaper Articles	11				13	13	8.5	9	10.5	9
Tests/Evaluation Materials	12.5	13		11.5	9.5	9	8.5			
Theses	12.5	13	10		14	13	12	10	10.5	10
Guides	14	13		11.5	11.5	10		13	10.5	
Personal Communications	15	10		8	15.5		12	15		
A-V Materials	16							11.5		11
Legislative Materials	17				15.5	13		15		13

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Table 23. Citation Age of Major Publication Formats

n = 3,179

Publication Formats	$\bar{x}$	Mdn	S.D.	C.I.	n
Journal Articles	8.30	5.66	8.71	7.82 to 8.79	1,243
Books/Monographs	10.41	7.05	11.07	9.75 to 11.06	1,097
Part of Collected Works	7.57	5.59	9.13	6.59 to 8.56	331
Reports	4.98	3.70	4.27	4.44 to 5.52	239
Others	6.60	4.35	8.21	5.61 to 7.58	269

Table 24. Citation Age of Major Publication Formats by Orientations

n = 3,179

Publication Format	Research $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	8.70	6.00	9.26	514 (51.4)
Books/Monographs	13.02	9.36	11.86	248 (24.8)
Part of Collected Works	6.86	5.08	6.39	117 (11.7)
Reports	4.70	3.92	3.25	33 (3.3)
Other	5.91	3.38	6.87	88 (8.8)

Publication Format	Interpretation $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	8.25	5.76	8.36	455 (45.5)
Books/Monographs	12.60	8.22	14.94	251 (25.1)
Part of Collected Works	6.75	5.23	5.76	142 (14.2)
Reports	5.30	3.89	5.12	64 (6.4)
Other	5.86	4.33	6.93	88 (8.8)

Publication Format	Practice $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	7.65	4.90	8.18	274 (23.2)
Books/Monographs	8.41	6.15	8.02	598 (50.7)
Part of Collected Works	10.36	6.25	15.65	72 (6.1)
Reports	4.90	3.40	4.01	142 (12.0)
Other	7.95	5.00	10.18	93 (7.9)

two-way analysis found significant differences in citation age between the orientations with F.05; 8, 2970 = 2.468. These findings confirm that the research orientation documents cite older works than do interpretation- and practice-oriented documents, and that interpretation-oriented documents cite older works than practice-oriented documents.

Table 24 shows several interesting differences between the orientations. Within two of the three orientations, the oldest median citation age is that of the book/monograph format. This implies that information contained in the book format is valued longer. The most recent citations are to reports and, following the same speculation, one wonders if report validity is temporary because reports tend to deal with topics of current interest and therefore obsolesce more rapidly. This researcher anticipated that 'parts of collected works' would be more like books and monographs; however, the data indicate this only for the practice-oriented documents. The median citation age for 'parts of collected works' in research- and interpretation-oriented documents approximates more closely the median citation age of journal literature.

Equally interesting are the findings about the differences between the orientations in the citation of publication formats. The formats cited most frequently by research- and interpretation-oriented documents are journal articles (51.4% and 45.5% respectively; 23% of the citations of practice-oriented documents are to journals). Books account for 24.8% of the citations in research-oriented documents, 25.1% in interpretation-oriented documents, and 50.7% in practice-oriented documents. Note that the citation percentage of the practice-oriented

documents to these two formats appears to be the reverse of that for research and interpretation-oriented documents.

If books and monographs represent information synthesized from a broad perspective, and journal articles tend to focus on more specific subjects, the inference to be drawn is that the practice-oriented writers rely on broader perspectives to inform their literature than do either research- or interpretation-oriented writers. In fact, research- and interpretation-oriented documents are indistinguishable as to their citations to the major formats analyzed, except for differences in their reliance on report literature, which is cited more by interpretation-oriented documents than by research-oriented documents.

Citation Age of Publication Formats by CIJE and RIE File.

Because documents in the CIJE file cite significantly older literature than do those in the RIE file, a breakdown by major publication formats was prepared (Table 25).

When separated by publication formats, without exception CIJE documents cite older literature; however, more CIJE than RIE documents cite journal articles (49.6% and 28.9%, respectively). The book/monograph publication format is cited more by RIE file documents (42.2%) than by CIJE file documents (26.6%). ANOVA failed to distinguish differences between mean citation age of files by format at the $\alpha = .05$ significance level. Two-way analysis gives $F.05; 4, 2970 = .386$. A comparison of the differences between the files and the differences between the orientations suggests that the citation practices of documents in the CIJE file are most like those of the research- and interpretation-oriented documents, and that the citation

Table 25. Citation Age of Major Publication Formats by CIJE and RIE Files

n = 3,179

Publication Format	CIJE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	8.85	6.15	8.94	778 (49.6)
Books/Monographs	12.39	9.06	11.90	418 (26.6)
Part of Collected Works	8.32	5.64	10.64	204 (13.0)
Reports	5.47	3.50	5.21	38 (2.4)
Other	7.73	4.00	10.28	131 (8.3)

Publication Format	RIE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	7.38	4.92	8.23	465 (28.9)
Books/Monographs	9.19	6.20	10.34	679 (42.2)
Part of Collected Works	6.38	5.53	5.81	127 (7.9)
Reports	4.89	3.74	4.07	201 (12.5)
Other	5.52	4.69	5.42	138 (8.6)

practices of the RIE file documents are most like the practice-oriented documents.

Citation Age of Publication Formats by Orientation/File.

Tables 26 - 28 show citation age for each orientation by publication format and file. The analyses of variance found no single group isolated for any orientation by mean citation age. ANOVA, in a three-way analysis of variance finds $F.05;\ 8,\ 2970 = 1.582$. Research-oriented documents in the CIJE file cite considerably more journals than those in the RIE file. This holds, to a lesser degree, for the other two orientations. Conversely, more books and monographs are cited by documents in the RIE file than the CIJE file by all three orientations. Reports are cited more by documents in the RIE file than by those in the CIJE file. The most noteworthy difference between the orientations is that practice orientation documents rely more on books and monographs than the other two orientations. Books and monographs are also the least recent works cited by all orientations.

It may be concluded that research-, interpretation-, and practice-oriented documents are distinguishable by the percentage of their journal article citations, although journal article citations are consistently higher in the CIJE file within each orientation. The RIE file documents appear to cite more reports than CIJE file documents. If the RIE file is primarily a file of reports and the CIJE file is a file of journal articles, then these two types of documents favor their own formats in their citation practices. The most uniform pattern of citations to formats obtaining between the CIJE and RIE files is for interpretation-oriented documents. Such conclusions have not been

Table 26. Research Orientation Citation Age of Major Publication Formats by File

n = 1,000

Publication Format	CIJE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	8.61	6.09	8.72	408 (56.7)
Books/Monographs	13.50	9.83	11.62	156 (21.7)
Part of Collected Works	7.09	5.25	6.22	97 (13.5)
Reports	5.56	5.75	3.05	9 (1.3)
Other	8.04	5.67	8.05	49 (6.8)

Publication Format	RIE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	9.05	5.63	11.15	106 (37.7)
Books/Monographs	12.21	8.67	12.27	92 (32.7)
Part of Collected Works	5.70	2.50	7.22	20 (7.1)
Reports	4.38	3.70	3.32	24 (8.5)
Other	3.23	1.60	.57	39 (13.9)

Table 27. Interpretation Orientation Citation Age of Major Publication Formats by File

n = 1,000

Publication Format	CIJE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	9.00	6.25	8.77	268 (48.7)
Books/Monographs	13.52	9.21	15.01	126 (22.9)
Part of Collected Works	7.18	5.40	5.59	82 (14.9)
Reports	6.50	3.83	6.53	18 (3.3)
Other	6.11	3.50	8.19	56 (10.2)

Publication Format	RIE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	7.17	5.13	7.63	187 (41.6)
Books/Monographs	11.67	7.56	14.87	125 (27.8)
Part of Collected Works	6.17	4.90	5.99	60 (13.3)
Reports	4.83	3.90	4.45	46 (10.2)
Other	5.44	5.10	3.92	32 (7.1)

Table 28. Practice Orientation Citation Age of Major Publication Formats by File

n = 1,179

Publication Format	CIJE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	9.47	6.06	10.24	102 (34.0)
Books/Monographs	10.07	8.25	8.11	136 (45.3)
Part of Collected Works	16.80	7.00	24.73	25 (8.3)
Reports	3.73	2.20	3.90	11 (3.7)
Other	10.65	3.75	16.18	26 (8.7)

Publication Format	RIE $\bar{x}$	Med.	S.D.	n (%)
Journal Articles	6.57	4.36	6.46	172 (19.6)
Books/Monographs	7.92	5.64	7.94	462 (52.6)
Part of Collected Works	6.94	6.06	4.94	47 (5.3)
Reports	5.00	3.56	4.08	131 (14.9)
Other	6.90	6.00	6.43	67 (7.6)

tested statistically, but are derived from the percentages in the frequency tables.

Discipline Dispersion

Discipline dispersion was assessed by orientation, by files and by orientation/file subset. Some descriptive analysis is provided for discipline dispersion over the major publication formats and for some of the most frequently cited journal titles. The sample included the additional CIJE file practice orientation references that had been randomly selected to increase the size of that subset.

Of the 38 subject areas/disciplines identified as possible literature sources, 29 were used. Table 29 illustrates the influence of various disciplines as literature sources by listing all 29 disciplines in rank order and shows the percentage of citations each discipline contributed to the total citation pool. If a cutoff point of 1% for the contribution of a discipline to the sample is assumed, it appears that 13 of the 29 disciplines contribute almost 95% of the citations. Among these, the discipline of elementary and early childhood, or the discipline whose professional literature is under investigation, accounts for 11.6% of the citations in the sample.

The hypotheses state that (1) in comparison to interpretation-oriented publications and to practice-oriented publications, research-oriented publications in elementary and early childhood education draw more heavily on the literature of other disciplines; (2) in comparison to practice-oriented publications, the

Table 29. Frequency of Discipline Dispersion and Impact in Percentages

n = 3,179

Discipline	Abs. Freq.	Rank Order	Freq. Count %	Cum. Freq. %
Developmental Child Psychology	479	1	15.1	15.1
Sociology	419	2	13.2	28.3
Elementary and Early Childhood Education	369	3	11.6	39.9
Medicine	348	4	10.9	50.8
Psychology	345	5	10.9	61.7
Educational Psychology	242	6	7.6	69.3
Education (General)	233	7	7.3	76.6
Home Economics	220	8	6.9	83.5
Language/Linguistics	115	9	3.6	87.1
Business/Economics	81	10	2.5	89.6
Recreation	44	11	1.4	91.0
Literature	43	12	1.4	92.4
Philosophy	41	13	1.3	93.7
Zoology	29	14	.9	94.6
Art	24	15	.8	95.4
Mathematics	21	16.5	.7	96.1
Natural History/ Biology	21	16.5	.7	96.8
Bibliography/ Library Science	1[illegible]	18	.6	97.4

Table 29. (continued)

n = 3,179

Discipline	Abs. Freq.	Rank Order	Freq. Count %	Cum. Freq. %
Engineering	17	19	.5	97.9
Law	15	20	.5	98.4
Anthropology	14	21	.4	98.8
Political Science	12	22	.4	99.2
Science (General)	8	23	.3	99.5
History	5	24	.2	99.7
Social Science (General)	4	25.5	.1	99.8
Music	4	25.5	.1	99.9
General Works	3	27.5	.1	100.0
Technology (General)	3	27.5	.1	100.1
Physics	1	29	.0	100.1

interpretation-oriented publications in elementary and early childhood education draw more heavily on the literature of other disciplines.

This researcher assumed that elementary and early childhood education is a discipline. Classification systems such as Dewey and Library of Congress (LC) assign special class numbers to subject areas in elementary and early childhood education, although these are subsumed under broader classes, such as education and psychology. The two classification systems, Dewey and LC, are structurally and conceptually different, and this researcher's judgment entered into the decision of achieving a correspondence between LC and Dewey. When codes were assigned to disciplines and corresponding LC and Dewey numbers were assigned to these codes, the primary reliance was on the LC classification, especially for elementary and early childhood education and developmental child psychology. Once LC numbers were identified, an attempt was made to find corresponding Dewey numbers. However, if a Dewey number that clearly fell within the scope was identified, a backward check to LC was made to insure a reasonable correspondence between the two systems.

The reliance on University of Illinois at Urbana-Champaign and Chicago Circle libraries allowed for further consistency checks on those materials classified by both libraries. In order to classify journal articles and peripheral materials, these were checked by identifiable key words in the titles or in the context of the citing document. Undeniably, errors in judgment were made, but such errors should be randomly dispersed across the orientations and files.

No statistical tests besides frequencies were performed on these data. The percentage was always calculated on each subset and thus expresses a calculated proportion of the reliance of that subset on elementary and early childhood education when it is compared to its reliance on other disciplines.

An interesting byproduct of this analysis is the possibility of determining which disciplines are major literature sources for the three orientations, the two files, and the orientation/file subsets. If it is assumed that references reflect the subject emphasis of the citing document, differences between the orientations and files are notable, especially in the degree of emphasis.

When elementary and early childhood education as a literature source is contrasted to other disciplines, the three orientations are not the same, although the differences between research orientation and interpretation orientation are slight. Elementary and early childhood education receives 5.6% of the citations in research-oriented documents, 6.5% of those in interpretation-oriented documents, and 21% of those in practice-oriented documents. Research-oriented documents in this sample cited 27 other disciplines; interpretation-oriented documents cited 25 other disciplines. Interpretation-oriented documents give a greater percentage of their citations to other disciplines than do practice-oriented documents, although both orientations cite the same number of other disciplines. Table 30 shows these findings.

Table 30. Elementary and Early Childhood Education and Other Disciplines as Literature Sources

n = 3,179

Orientation	Percent of Other Disciplines[a]	Percent EECE[b]	Number of Other Disciplines
Research	94.4	5.6	27
Interpretation	93.5	6.5	25
Practice	79.0	21.0	25

[a] 'Other Disciplines' refers to disciplines other than Elementary and Early Childhood Education in which citations have been classified.

[b] EECE = Elementary and Early Childhood Education

Discipline Dispersion by Orientation

The limited extent to which the professional literature classified as research oriented relies on its own discipline is surprising. Table 31 shows the major contributing disciplines for each orientation and isolates that portion of education that is not covered by elementary and early childhood education. Table 60 in Appendix A lists the complete array of disciplines and their corresponding percentages of contribution to each orientation.

The high ranking disciplines are the same for research orientation and interpretation orientation, although they are used as literature sources to a different degree. The practice orientation is distinguished by reliance on education in general and elementary and early childhood education in particular. A percentage assessment indicated that research-oriented publications draw more heavily on the literature of other disciplines than interpretation-oriented publications, and that interpretation-oriented publications draw more heavily on the literature of other disciplines than do practice-oriented publications.

Sociology, medicine, and home economics seem to be only distantly related to elementary and early childhood education at first glance. However, if one assumes that the concerns of early childhood education are frequently with underprivileged children, the relationship to the former disciplines is not surprising. Inquiries about this group of children might lead to investigations of socio-economic structures (e.g., studies of the effects of single-parent families on children). Because health care was classified with medicine, it also is not

Table 31. Discipline Dispersion by Orientations

n = 3,179

	Orientation					
	Research		Interpretation		Practice	
Discipline	%	Rank	%	Rank	%	Rank
Developmental Child Psychology	23.0	1	12.0	4	10.9	4
Psychology	16.8	2	13.2	3	3.8	9
Sociology	14.9	3	13.7	2	11.3	3
Medicine	10.0	4	14.2	1	9.0	5
Elementary and Early Childhood Education	5.6	7	6.5	9	21.0	1
Education (General)	3.1	8	6.8	8	11.4	2
Home Economics	2.7	9	9.3	6.5	8.5	6
Educational Psychology	7.4	5	9.5	5	6.2	7

A full display of ranks is found in Table 60.

surprising that the latter discipline plays an important role in elementary and early childhood education. Furthermore, early childhood education has been associated with home economics for some time; this may have influenced the classification of earlier works. Citations dealing with foods and the effects of nutrition, depending upon the perspective of the cited documents, might have been classed with home economics also.

The dispersion of citations to publications of other disciplines suggests that research-oriented documents are concerned with developmental child psychology, and that practice-oriented documents are concerned primarily with educating the child. Interpretation-oriented documents appear less focused on any one discipline; however, their relatively low concern with education is more similar to research than to practice-oriented documents.

Discipline Dispersion by RIE and CIJE Files

When discipline dispersion was inspected by file, CIJE documents were shown to rely on general psychology and, to a greater extent, on developmental child psychology. The greatest number of literature sources cited by RIE file documents comes from elementary and early childhood education. Here again, it should be noted that, although medical publications appear to be a very important literature source, these sources should not be regarded, necessarily, as dealing only with pure medicine. Health was classed in this group, and it is this researcher's impression that health issues form an equal portion of the literature classified as medicine. The high-ranking disciplines as

citation sources are listed for each file separately in Table 32. The complete list of literature sources for each file is shown in Table 61 in Appendix A.

As Table 32 shows, CIJE documents depend much more on educational psychology as a literature source than they do on elementary and early childhood education. In a sense, this emphasizes the overall dependence of CIJE file documents upon psychology and its subfields. Of the psychology subfields, only developmental child psychology plays an important role in the RIE file documents; elementary and early childhood education literature receives the highest percentage of citations. Sociology contributes many citations to documents in both files.

Literature dispersion assessed by files is only suggestive of possible trends, due to the inconsistencies of representative cases in the sample.

Discipline Dispersion by Orientation/File Subsets

When discipline dispersion was assessed by orientation/file subset, the research orientation RIE file was shown to rely heavily on elementary and early childhood literature. In this respect, it appears to be similar to practice orientation. Developmental child psychology seems to be very important to all orientation/file subsets. The influence of this discipline seems to diminish from research to interpretation to practice orientation publications in the same manner in which elementary and early childhood education literature sources increase. The RIE file documents show a greater concern with elementary and early childhood education than the CIJE file documents. The

Table 32. Discipline Dispersion by CIJE and RIE Files

n = 3,179

	File			
	CIJE		RIE	
Discipline	%	Rank	%	Rank
Developmental Child Psychology	18.4	1	11.9	4
Psychology	16.1	2	5.8	7
Sociology	14.1	3	12.3	2
Medicine	9.9	5	12.0	3
Elementary and Early Childhood Education	4.8	7	18.2	1
Education (General)	6.2	6	8.4	6
Home Economics	3.5	9	10.2	5
Educational Psychology	10.2	4	5.1	8

A full display of ranks is found in Table 61.

influence of educational psychology is surprisingly low, particularly in the RIE file. Complete lists of discipline dispersion for all orientations by file appear in Tables 62 - 64 in Appendix A. Table 33 displays disciplines that are major contributors to the literature sources of the three orientation/file subsets.

Clearly, there are some differences in the dispersion of specific disciplines among the orientations. These differences appear between large subdivisions, such as the three orientations, or between the two files. In the splintered orientation/file subsets, it is harder to identify patterns. That research-oriented documents focus on literature from developmental child psychology, and that practice-oriented documents are more committed to the home discipline is fairly clear. What emerges overall is that elementary and early childhood literature draws heavily on psychology and its subfields. Only for practice-oriented documents do home discipline citations exceed those to psychology. This can be seen when developmental child psychology, general psychology, and educational psychology are combined, and elementary and early childhood education and general education are combined. Even in the orientation/file subsets, the results (calculated from the precentages shown in Table 33) illustrate this point quite convincingly (Table 34).

The data in Table 34 suggest that as commitment to psychology diminishes, commitment to education increases. This pattern is particularly pronounced for the CIJE subfile documents in each orientation. Considering the ERIC document distribution by orientations and files, and assuming that the small sample drawn is representative of

Table 33. Discipline Dispersion by Orientation/File Subsets

n = 3,179

Discipline	Orientation											
	Research				Interpretation				Practice			
	CIJE		RIE		CIJE		RIE		CIJE		RIE	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Developmental Child Psychology	25.9	1	15.7	2	12.9	3	10.9	4	10.3	4.5	11.1	3
Psychology	17.8	2	14.2	3	19.6	1	5.3	8	5.3	7	3.3	9
Sociology	16.4	3	11.0	4	13.1	2	14.4	3	10.3	4.5	11.6	2
Medicine	10.4	4	8.9	5	12.2	5	16.7	1	4.3	8.5	10.6	4
Elementary and Early Childhood Education	1.3	11	16.7	1	3.6	8	10.0	5	15.7	2	22.9	1
Education (General)	1.0	12	8.0	6	5.8	6	8.0	6	19.3	1	8.6	6
Home Economics	2.8	7	2.5	10	4.0	7	15.8	2	4.3	8.5	9.9	5
Educational Psychology	8.2	5	5.3	8	12.4	4	6.0	7	11.1	3	4.6	8

A full display of ranks is found in Tables 62, 63, and 64.

Table 34. Dispersion of Psychology and Education Subfields

n = 3,179

Discipline Composites	Orientation: Research CIJE %	Research RIE %	Interpretation CIJE %	Interpretation RIE %	Practice CIJE %	Practice RIE %
Developmental Child Psychology, Psychology, Educational Psychology	51.9	35.2	44.9	22.2	26.7	19.0
Elementary and Early Childhood Education, Education (General)	2.3	24.7	9.4	18.0	35.0	31.5

the elementary and early childhood literature in the ERIC system, the overwhelming conclusion emerges that 47.5% of this literature in the CIJE file and 23.6% in the RIE file relies on psychology and its subfields. The reliance on the disciplines associated with education is 7.2% for the CIJE file and 25.1% for the RIE file.*

Discipline Dispersion by Major Publication Formats

Discipline dispersion was considered across the major publication formats of journal articles, books and monographs, publications that form part of a collected work, and reports. Table 35 displays frequency analysis findings for those disciplines that together contribute 90% of the literature sources (ranks 1-11) given the increased sample size of 3,179 citations. In the left hand column, disciplines are arranged by rank of their total contribution to elementary and early childhood publications and include the percentage of that contribution in parentheses. The remaining five columns give the percentage contribution of each format to the citation count of a specific discipline (to the left of the /) and the total percentage of the contribution of the discipline by format to literature sources (to the right of the /). The overall percentage contribution of each format is listed in parentheses under that format.

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* These percentages were found by calculating the file sum of citations to the discipline composite, given the total number of citations in the orientation/file subset of that sample and dividing this sum by the total citation population of that file. The data were taken from Table 8 and the number of citations found among the orientation/file subsets in the sample.

Table 35. Discipline Dispersion by Major Publication Formats

n = 3,179

Discipline		Publication Format: Journals (39.1)	Books/ Monographs (34.5)	Part of Collected Works (10.4)	Reports (7.5)	Others (8.5)
Developmental Child Psychology	(15.1)	45.5/6.9	29.4/4.4	13.8/2.1	.6/.1	10.6/1.6
Sociology	(13.2)	35.3/4.7	40.8/5.4	9.8/1.3	8.1/1.1	6.0/.8
Elementary and Early Childhood Education	(11.6)	19.5/2.3	53.4/6.2	6.2/.7	13.6/1.6	7.3/.8
Medicine	(10.9)	50.0/5.5	19.0/2.1	16.4/1.8	8.6/.9	6.0/.7
Psychology	(10.9)	47.8/5.2	31.9/3.5	14.5/1.6	.6/.1	5.2/.6
Educational Psychology	(7.6)	58.7/4.5	16.5/1.3	3.7/.3	7.0/.5	14.1/1.1
Education (General)	(7.3)	28.3/2.1	43.3/3.2	6.0/.4	12.0/.9	10.3/.8
Home Economics	(6.9)	42.3/2.9	28.2/2.0	5.9/.4	13.6/.9	10.0/.7
Language/Linguistics	(3.6)	48.7/1.8	20.0/.7	18.3/.7	1.7/.1	11.3/.4
Business/Economics	(2.5)	29.6/.8	33.3/.8	9.9/.3	16.0/.4	11.1/.3
Recreation	(1.4)	6.8/.1	36.4/.5	2.3/.0	29.5/.4	25.0/.3

Figures in parentheses under publication formats and after disciplines refer to that discipline's or format's contribution to the sample in percentages. Within the columns, figures to the left of the slash refer to the percentage that each format contributes to a specific discipline's citation count; figures to the right of the slash refer to the total percentage of that discipline's total contribution by format to the citation count.

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For the highest ranking eight disciplines, the most important literature source is journal articles, with three outstanding exceptions. These are elementary and early childhood education, that portion of education that was not associated with elementary and early childhood education, and sociology. The percentages indicate clearly that the most important literature sources for education are books and monographs when these are used to support professional literature for elementary and early childhood education. This deserves further investigation. It may be too facile to ascribe this phenomenon to a relative lack of citable journal literature in education or to make the assumption that the best in education is found between "hard covers". Educational psychology, a field closely related to education, is cited more through journal literature than through monographs.

Journal literature appears to be the most important citation source, although the top entrants, with 5% or more overall contribution, also include the book/monograph format. These top contributing sources are developmental child psychology, through journal literature (6.9%), elementary and early childhood education through book/monograph format (6.2%), medicine through journal literature (5.5%), sociology through book/monograph format (5.4%), and psychology through journal literature (5.2%). These percentages are not representative of the population because of the sampling technique discussed in the methodology section.

Table 35, although not representative of the population, summarizes sample statistics of the three orientations for the major disciplines and their format sources as they serve to support elementary and early childhood education literature. Tables 65 - 69 in Appendix A give

detailed percentages of the top 11 discipline contributions through major formats for orientations, files, and orientation/file subsets. For each table, the percentages are representative of all the disciplines within each subset by format and, therefore, add to approximately 90%. The percentages are calculated for each subset individually and should be read in the same manner as Table 35, except that row total percentages for each discipline by format have been omitted.

Discipline Dispersion by Major Publication Formats and Orientations. Table 65 in Appendix A permits comparison of the percentage of citations drawn from each format by the three orientations. Journal articles and books/monographs are the two major contributors of citations to documents in all three orientations; however, research- and interpretation-oriented documents cite more parts of collected works than reports, and practice-oriented documents cite more reports than parts of collected works. Journal articles are the preferred citation source of research- and interpretation-oriented documents for most of the identified disciplines; books and monographs are preferred when citations are made to the home discipline. Practice-oriented documents cite more books and monographs from these most-cited disciplines.

If conclusions were to be drawn from the data in Table 65, it appears that writers of research-oriented documents monitor journal literature in such disciplines as developmental child psychology, psychology, sociology, medicine, educational psychology, and language/linguistics. The undeniable focus of research-oriented documents is developmental child psychology through journal articles

(12.9%). The focus of practice-oriented documents is through books and monographs (12.8%) in elementary and early childhood education. Given a 5% or higher citation rate from a specific format associated with one of the analyzed disciplines, we note for

Research-oriented documents:

Developmental child psychology	journals (12.9%)
Psychology	journals (9.1%)
Sociology	journals (6.9%)
Medicine	journals (6.4%)
Educational psychology	journals (5.6%)

Intepretation-oriented documents:

Medicine	journals (8.1%)
Educational psychology	journals (6.0%)
Psychology	journals (5.5%)
Home economics	journals (5.3%)
Developmental child psychology	journals (5.1%)
Sociology	books/monographs (5.0%)

Practice-oriented documents

Elementary and early childhood education	books/monographs (12.8%)
Sociology	books/monographs (6.4%)
Developmental child psychology	books/monographs (5.4%)
Education (general)	books/monographs (5.3%)

Discipline Dispersion by Major Publication Formats and Files.

The citation practices of documents in the RIE file are substantially different from those of documents in the CIJE file. Formats of the citation sources of each discipline by the two files are shown in Table 66 in Appendix A. It must be repeated that these findings, due to sampling procedures, are only suggestive.

Documents in the CIJE file cite more journal articles than other formats. Again, the exception is for education citations, where more books/monographs are used. CIJE file documents cite fewer reports than RIE documents.

The RIE file documents cite more books/monographs than journal articles, although the difference between these two major formats is not large. Continuing with the 5% or higher contribution of a discipline by format within a file, some interesting trends are notable. The psychology subfields receive a focus through journal literature, as, to a lesser extent, does medicine. In the RIE file, the one distinctive focus is through books and monographs on elementary and early childhood education. Note that the RIE file documents value report literature, which could account for the fact that, for the home discipline, report literature receives a higher percentage of citations than journal literature.

The following lists summarize the findings for the 5% or higher citation ratios from a specific format associated with one of the major disciplines by file.

CIJE File:

Developmental Child Psychology	journals	(9.6%)
Psychology	journals	(8.2%)
Educational psychology	journals	(7.0%)
Medicine	journals	(5.9%)
Sociology	journals	(5.7%)

RIE File:

Elementary and early childhood education	books/monographs	(10.1%)
Sociology	books/monographs	(5.9%)
Developmental child psychology	books/monographs	(5.4%)
Medicine	journals	(5.1%)

Discipline Dispersion by Major Publication Formats and Orientation/File Subsets.

When the same data are displayed by orientation/file subsets, several interesting findings emerge. Tables 67 to 69 in Appendix A display the percentages for each orientation/file subset separately.

Research-oriented documents in the RIE file cite more developmental child psychology and psychology from both journals and books/monographs than from other formats. Equally notable is that CIJE file documents cite fewer reports. However, citations to the home discipline, to education (general), and to recreation in the report format occur more frequently in the RIE file than in the CIJE file. Both the RIE file and the CIJE file documents favor journals as citation sources, yet for citations to the higher ranking disciplines, the books and monographs are cited almost as much as journals by documents in the RIE file. CIJE

file documents cite predominantly journals, and there is a clear-cut focus on psychology, developmental child psychology, and educational psychology. The following lists show those disciplines that receive 5% or more citations by specific format within each file of research-oriented documents.

CIJE File

Developmental child psychology	journals (15.4%)
Psychology	journals (10.4%)
Sociology	journals (7.9%)
Medicine	journals (6.5%)
Educational psychology	journals (6.3%)

RIE File

Developmental child psychology	journals (6.4%) books/monographs (5.7%)
Psychology	journals (5.7%) books/monographs (5.7%)
Medicine	journals (6.0%)
Sociology	books/monographs (5.3%)
Elementary and early childhood education	books/monographs (5.0%)

Interpretation-oriented documents in both files cite predominantly journal articles. RIE file documents cite more reports than those in the CIJE file. Journals are cited more by CIJE file documents. The home discipline documents in both files are cited more through books and monographs than through journals. Citations to psychology and its subfields appear to be more valued in the journal format for both files,

although books and monographs play an important role in the CIJE file as well. Interestingly, RIE file documents cite developmental child psychology more through books and monographs. The RIE file documents focus on medicine and home economics and cite those disciplines predominantly through journal literature. The focus of the CIJE file documents is on general psychology and educational psychology. Those disciplines cited in excess of 5% by a specific format in interpretation-oriented documents are listed below:

CIJE File

Psychology	journals (8.5%) books/monographs (5.8%)
Educational psychology	journals (9.1%)
Medicine	journals (6.9%)
Developmental child psychology	journals (5.6%)
Sociology	books/monographs (5.1%)

RIE File

Medicine	journals (9.6%)
Home economics	journals (9.6%)
Sociology	journals (5.3%)

The one significant finding about practice-oriented documents is that in neither of the files do citations through journal articles exceed those through books and monographs. In both of the previously discussed orientations, citations to journals exceed those to books and monographs, to a greater or lesser degree, when the subsamples are viewed in their entirety. As in the other two orientations,

practice-oriented documents in the CIJE file cite more journals than do practice-oriented documents in the RIE file. Both files focus on elementary and early childhood education, but the CIJE file documents favor citations of journal literature for the home discipline as well. CIJE file documents also cite many books and monographs on elementary and early childhood education. This is the only orientation/file subset in which journal citations exceed book/monograph citations for the home discipline. In the other orientation/file subsets, developmental child psychology citations come primarily from journal literature (the exception is the interpretation orientation/RIE file, in which books and monographs are most cited), but in this orientation documents of both files cite more through books and monographs than through journals. The disciplines that receive 5% or more citations from practice-oriented documents through a specified format are as follows:

CIJE File

Education (general)	journals (6.7%) books/monographs (8.0%)
Elementary and early childhood education	journals (8.0%) books/monographs (6.0%)
Sociology	books/monographs (6.0%)
Educational psychology	journals (5.0%)

RIE File

Elementary and early childhood education	books/monographs (15.1%)
Sociology	books/monographs (6.6%)
Developmental child psychology	books/monographs (5.7%)
Home economics	books/monographs (5.5%)

It is difficult to assess discipline dispersion by major publication formats because, given the small sample size, further divisions of the sample create exceedingly small or even empty cells. Focus, in contrast to dispersion, suggests the characteristics of citations in this literature and was used for the following analysis.

Research and interpretation-oriented documents cite predominantly journals. Both of these orientations focus on psychology and its subfields through journals.

Practice-oriented documents rely mostly on books and monographs and focus on education. However, elementary and early childhood education and education (general) are most frequently cited in the book/monograph format. Thus, it is difficult to assess whether the discipline determines the format of cited literature, or whether each orientation has a proclivity for a certain format. The more an orientation cites a specific discipline, the more likely it is that these citations are associated with the format that predominates in that orientation.

The findings indicate file differences between the orientations. CIJE file documents (i.e., journal articles) cite more journals. RIE file documents cite more books and monographs. The focus in the CIJE file is on psychology and its subfields, which is not surprising given the number of psychological journals that are indexed by this clearinghouse for the ERIC database (see Table 2). The main focus of the RIE file documents is elementary and early childhood education, although medicine, sociology, and developmental child psychology are also important. However, assessing only file differences, it appears that psychology, sociology, and developmental child psychology citations

are controlled by the file (more citations from journal to journal and more citations from fugitive reports to books). The disciplines of elementary and early childhood education and education (general) are controlled by the discipline itself, with documents of both files citing books and monographs. These findings do not hold when citations to disciplines by format are analyzed for each orientation separately. The orientation concept appears to slant research- and interpretation-oriented documents toward citations to journals and practice-oriented documents to books and monographs.

Discipline Dispersion Across Major Journal Titles

Discipline dispersion across journal titles was considered from two points of view. In the first instance, the expanded sample of 235 CIJE documents was grouped by the titles of the journals from which these documents were taken, and the sample references from each title were assessed for discipline dispersion. This showed which disciplines receive citations from each of the journals indexed by ERIC/EECE for the CIJE file. In the second instance, the citations received for journal articles from the expanded ERIC document sample were grouped under the titles of the journals in which the cited documents were published. Discipline dispersion for each of the journals in which the citation was found was assessed as far as the citations would allow. This permitted assessment of discipline dispersion of citations received by journal titles and of which journals serve as literature sources for which subject areas.

Discipline Dispersion in CIJE Source Journals.

The CIJE file comprises journal literature, and the sample of ERIC documents derived from this file, within the sampling procedures as explained above, drew individual journal articles from those indexed by the ERIC/EECE Clearinghouse. During the time period under study, ERIC indexed 30 journals cover-to-cover or selectively (see Table 2). Twenty-three of these journals were included in the expanded sample and yielded varying numbers of articles. These are displayed in Table 36.

Of the 23 journals, 15 contribute to research, 13 to interpretation, and 10 to practice orientation. Only four contribute to all three orientations, but even Child Development contributes primarily to research orientation. Child Welfare contributes to all three orientations, but primarily to interpretation orientation. Day Care and Instructor appear to contribute primarily to practice orientation. Table 36 shows that nine journals contribute exclusively to research orientation. The 235 ERIC documents from the CIJE file yielded a sample of 1,569 references. Table 37, grouping all sampled citations by title of the journal in which they were published, shows discipline dispersion.

A CROSSTABS analysis of the data in Table 37 yielded $X^2 = 1980.63$ with 594 degrees of freedom at $\alpha = .05$. In these CIJE indexed journals, citations are highly dispersed across the disciplines. Of the 28 disciplines identified, Child Development disperses across 20 disciplines, Human Development and Young Children across 18 disciplines each, Childhood Education across 16 disciplines, and Child Welfare and Developmental Psychology across 13 disciplines each. Psychology,

Table 36. CIJE Source Journals for Sampled Documents

n = 235

Journal Titles	Orientations		
	Research	Interpretation	Practice
Adolescence	3	4	2
American Journal of Education	1	1	
Australian Journal of Early Childhood		3	2
Child Care Quarterly			
Child Development	24	3	1
Child Study Journal		1	
Child Welfare	1	14	6
Childhood Education		8	15
Children Today		9	2
Day Care and Early Education			18
Developmental Psychology	11		
Early Child Development and Care			
Elementary School Journal	1	3	3
Elements: Translating Theory into Practice			
Human Development	2	4	
Instructor		3	34
International Journal of Behavioral Development	2		
International Journal of Early Childhood			
Journal of Applied Developmental Psychology			
Journal of Child Psychology and Psychiatry and Allied Disciplines	3		
Journal of Experimental Child Psychology	10		
Journal of Genetic Psychology	6		
Journal of Personality and Social Psychology	2		
Journal of Psychology	3		
Merrill-Palmer Quarterly	2		
Monographs of the Society for Research in Child Development	1		
Probe			
Psychological Bulletin		2	
School Review			
Young Children		6	14

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sociology, and educational psychology citations are found in 19 of 23 journals; developmental child psychology citations are found in 18 journals; and education (general) and medicine citations are found in 15 journals. The home discipline, elementary and early childhood education, is infrequently cited in those journals indexed by the ERIC/EECE Clearinghouse; the highest number of citations to this discipline comes from Young Children, which cited the home discipline 35 times (17% of its contribution to the citation pool). Elementary School Journal cited the home discipline 10 times (16%), and Childhood Education 9 times (9%). Overall, citations to elementary and early childhood education constitute 4.8% of the citation pool, or 76 of 1,569 citations. These citations do not distinguish between the publication formats; thus, only a portion of them belong to other journal literature.

Discipline Dispersion Across Cited Journals.

A comparison of the major publication formats for all sampled citations from RIE and CIJE file documents showed that 39.1% of citations are to journal articles. Table 70 in Appendix A gives the dispersion of all the disciplines by major formats when both CIJE and RIE file citations are combined. These journal article citations accounted for 1,243 citations in the sample, are dispersed across 412 journal titles, and, when the journal articles are classified, represent 23 disciplines. The journal format appears to provide access to fewer disciplines than the book format (23 and 29 respectively). Relative to their overall contribution, the journals yielded fewer citations in the field of education than did books. (The opposite is true of developmental child

psychology and psychology, for which the journal format provided more citation sources than did books.)

Those disciplines in journal literature citations that contribute 10% or more to any orientation or orientation/file subset were identified, allowing comparison of the differences between the discipline dispersions by orientation of journal literature citations and a comparison of discipline dispersions of journal literature citations to discipline dispersion when formats are not distinguished. In the previous sections, dispersion among the major contributing disciplines was assessed using citations from all formats by orientation, file, and orientation/file subsets (see Tables 31-33).

Tables 71 - 75 in Appendix A list the complete array of disciplines and their corresponding citation percentages as contributed by journal literature, showing the overall dispersion picture. Journal literature citations in the research orientation are dispersed across 20 disciplines. When citations by CIJE and RIE file documents to journal literature are separated, the dispersion ratio for disciplines was found to be 16 : 13 (see Table 73). Interpretation-oriented journal literature citations disperse across 17 disciplines, with the same 16 : 13 ratio between CIJE and RIE file documents. Practice-oriented journal literature citations disperse across only 14 disciplines at a 13 : 13 ratio between the two files.

When discipline dispersion of citations was not distinguished by format and was compared to discipline dispersion of journal literature citations, elementary and early childhood education was shown to be cited considerably less in journal literature. In research-oriented

documents, the home discipline receives a mere 2.3% of the citation of the journal literature citation pool; no citations to the home discipline could be identified among research-oriented CIJE file documents. For the interpretation orientation, 3.7% of the journal literature citations were to the home discipline. The home discipline received 15.7% of the citations in practice-oriented documents. When all formats were considered together, the home discipline was shown to receive 5.6% of the citations from research-oriented documents, 6.5% from interpretation-oriented documents, and 21% from practice-oriented documents. For all three orientations, journal literature appears to be a less important source of citations in the home discipline than when the other formats are considered together.

Tables 38 - 40 display the major contributing disciplines in journal literature by orientation, file, and orientation/file subsets. A discipline is considered to be a major discipline if 10% or more of the citations of any orientation or file/subset are associated with the discipline. Although only eight disciplines qualified for the overall citation sample, nine from the journal literature subset were used. The added discipline is business/economics, which received 10.5% of the citations of practice-oriented RIE file documents. This implies that practice-oriented fugitive documents are concerned with economic conditions and trends as they affect education.

When journal citations (Table 38) are compared to all citations (Table 31), it appears that journals are a more important source for psychology and its subfields than for education. This holds for all three orientations.

Table 38. Discipline Dispersion of Citations to Journal Literature by Orientations

n = 1,243

Discipline	Orientation					
	Research		Interpretation		Practice	
	%	Rank	%	Rank	%	Rank
Developmental Child Psychology	25.1	1	11.2	5	13.9	2
Psychology	17.7	2	12.1	3	6.9	8.5
Sociology	13.4	3	10.8	6	10.9	4
Medicine	12.5	4	17.8	1	10.6	5
Elementary and Early Childhood Education	2.3	9	3.7	8	15.7	1
Education (General)	.6	12	6.4	7	12.4	3
Home Economics	3.3	7	11.6	4	8.4	7
Educational Psychology	10.9	5	13.2	2	9.5	6
Business/Economics	.4	13.5	.7	15	6.9	8.5

Rank order of disciplines established for each sample subset by taking into account all the disciplines that serve as literature sources. The resulting broken rank order is due to those disciplines not identified in this table. Complete data are found in Table 71.

Table 39. Discipline Dispersion of Citations to Journal Literature by CIJE and RIE Files

n = 1,243

	File			
	CIJE		RIE	
Discipline	%	Rank	%	Rank
Developmental Child Psychology	19.4	1	14.4	2
Psychology	16.6	2	7.7	6
Sociology	11.6	5	12.5	4
Medicine	11.8	4	17.6	1
Elementary and Early Childhood Education	3.7	9	9.2	5
Education (General)	4.1	7	7.3	7
Home Economics	3.9	8	13.5	3
Educational Psychology	14.1	3	6.9	8
Business/Economics	.1	20	4.9	9

Rank order of disciplines established for each sample subset by taking into account all the disciplines that serve as literature sources. The resulting broken rank order is due to those disciplines not identified in this table. Complete data are found in Table 72.

Table 40. Discipline Dispersion of Citations to Journal Literature by Orientation/File Subsets

n = 1,243

	Orientation											
	Research				Interpretation				Practice			
	CIJE		RIE		CIJE		RIE		CIJE		RIE	
Discipline	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Developmental Child Psychology	27.2	1	17.0	1	11.6	4	10.7	4	8.8	4	16.9	1
Psychology	18.4	2	15.1	3	17.5	2	4.3	8	6.9	6.5	7.0	8
Sociology	14.0	3	11.3	4.5	9.3	5	12.8	3	7.8	5	12.8	2.5
Medicine	11.5	4	16.0	2	14.2	3	23.0	1.5	6.9	6.5	12.8	2.5
Elementary and Early Childhood Education	0	-	11.3	4.5	1.9	12	6.4	6	23.5	1	11.0	4
Education (General)	.2	11	1.9	9.5	4.1	7.5	9.6	5	19.6	2	8.1	7
Home Economics	3.4	7	2.8	8	3.7	9	23.0	1.5	5.9	8	9.9	6
Educational Psychology	11.0	5	10.4	6	18.7	1	5.3	7	14.7	3	6.4	9
Business/Economics	0	-	1.9	9.5	0	-	1.6	9	1.0	11.5	10.5	5

Rank order of disciplines established for each sample subset by taking into account all the disciplines that serve as literature sources. The resulting broken rank order is due to those disciplines not identified in this table. Complete data are found in Tables 73, 74, and 75..

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Table 39 isolates journal literature and presents the same data as is presented in Table 32, in which formats are not distinguished. These tables show discipline dispersion of citations in the CIJE and RIE files separately. Psychology and its subfields receive proportionately more citations in journal literature and proportionately less when formats are not distinguished. The journal format also appears to be a more valued source of citations for medicine. The RIE file documents cite education more and psychology disciplines less than CIJE file documents, whether journal literature citations are isolated or not.

Table 40 displays the nine major disciplines contributing 10% or more to journal literature citations in the three orientation CIJE and RIE subfiles. Although more citations to psychology than to education were observed when journal literature was isolated from the combined format sample (see Table 33), a notable exception is the discipline of elementary and early childhood education in the CIJE/practice orientation subfile. When all formats were considered together, citations to the home discipline in practice-oriented documents were shown to comprise 15.7% of the CIJE sample and 22.9% of the RIE sample. When journal literature citations were isolated, the figures were 23.5% for the CIJE file and 11% for the RIE file. This suggests that, if practice-oriented documents are the most education oriented, then authors who contribute to these documents monitor journal literature on education and cite this literature.

The importance of journal literature to psychology and its subfields can be seen by comparing Table 34 to Table 41. When journal literature is isolated, psychology and its subfields are shown to be cited more in

Table 41. Dispersion of Psychology and Education Subfields in Citations to Journal Literature

n = 1,243

	Orientation					
	Research		Interpretation		Practice	
	CIJE	RIE	CIJE	RIE	CIJE	RIE
Discipline Composites	%	%	%	%	%	%
Developmental Child Psychology, Psychology, Educational Psychology	56.6	42.5	47.8	20.3	30.4	30.3
Elementary and Early Childhood Education, Education (General)	.2	13.2	6.0	16.0	43.1	19.1

five of the six orientation/file subsets than when it is not isolated. The reverse is true of education in all but the practice orientation/CIJE subfile. The number of education citations to journal literature by practice oriented CIJE file documents suggests that when an orientation has a strong focus (and it appears that the practice orientation has a greater concern with education and a lesser concern with child development than the other two orientations), journal literature assumes greater importance.

Bradford's Distribution of Cited Journal Literature.

It was noted above that the 1,243 citations received by journal articles are dispersed across 412 journal titles. Table 42, a Bradford distribution table, shows three zones with references distributed in approximately equal proportions. Zone I identifies 10 journal titles that provide 387 or 31.1% of the references; Zone II identifies 58 titles that provide 376 or 30.2% of the references; Zone III identifies 344 journals that provide 480 or 38.6% of the references.

The journal titles were identified for Zones I and II. These are displayed in Table 76 in Appendix A. The 10 most frequently cited journals in elementary and early childhood education literature (or those journals that fall in Bradford's Zone I) and the disciplines that were identified for each of the titles are listed in Table 43.

Of the total of 72 cited articles classified in elementary and early childhood education, only 4 can be found among the top 10 journal titles. Of the 66 articles cited from education (general), only 1 is among the top ten journals. Educational psychology figures more prominently in the top 10 journals. Of the possible 142 articles

Table 42. Bradford Distribution for Cited Journal Titles*

n = 1,243

Number of Journal Titles	Number of References Yielded	Cumulative Sum of Journals	Cumulative Sum of References	
1	136	1	136	
1	72	2	208	
1	27	3	235	ZONE 1
1	25	4	260	Journal Titles 10
2	23	6	306	References 387
2	21	8	348	
1	20	9	368	
1	19	10	387	
1	18	11	405	
1	16	12	421	
1	15	13	436	ZONE 2
1	14	14	450	Journal Titles 58
1	13	15	463	References 376
1	11	16	474	
6	10	22	534	
1	9	23	543	
3	8	26	567	
4	7	30	595	
5	6	35	625	
6	5	41	655	
27	4	68	763	
36	3	104	871	
64	2	168	999	ZONE 3
				Journal Titles 344

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Table 43. Discipline Dispersion in Most Frequently Cited Journals

n = 1,243

Discipline	Cited Journals									
	Child Development	Developmental Psychology	Journal of Experimental Child Psychology	American Psychologist	Journal of Personality and Social Psychology	Psychological Bulletin	Human Development	Journal of Educational Psychology	Psychological Review	Child Care Quarterly
Philosophy				2			4			
Psychology	6	16	1	11	13	11	7		5	
Sociology	13	9		1	7	1	3		1	
Political Science							1			
Elementary and Early Childhood Education	2			1				1		
Educational Psychology	24	8	6	2	3	2		20	7	
Education (General)									1	
Art	1									
Language/Linguistics	11		1				2	1	1	
Mathematics	2					3				
Natural History/ Biology						1				
Zoology		1				2				
Developmental Child Psychology	67	30	19	6		3	4		5	1
Medicine	1	3		1						
Home Economics	9	5		1						18

Most frequently cited journals are those associated with Bradford's zone one (see Table 42).

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classified with this discipline, 72 are in Bradford's Zone I. Three of those journals in the top zone are not among the journal titles that ERIC/EECE Clearinghouse indexes (i.e., American Psychologist, Journal of Educational Psychology, and Psychological Review).

Journal titles identified in Bradford's Zones I and II were grouped by orientations, file, and orientation/file subsets. Because Zones I and II included those journal titles that were cited four or more times, only the journal titles that were cited four or more times by an orientation, file, or orientation/file subset are listed in Tables 77 - 81 in Appendix A.

If core journals in a field are defined as those contributing approximately one-third of journal citations to the professional literature of that field (i.e., as in Bradford's Zone I), the focusing was sufficiently tight when orientations were assessed to identify core journal titles for each of them. The greatest dispersion was found for interpretation orientation and the greatest focusing for research orientation.

Research-oriented documents referred to 514 journal articles; 23 journals received four or more citations, with 205 or 40% of citations going to journals cited less than four times. (This exceeds Zone III, but due to a decision made during data coding, journal titles that received three citations or fewer were combined in one group; this made it virtually impossible to identify Bradford's distribution in the various subsets of the sample.) However, Child Development alone accounts for 17.5% of journal citations, and the top five cited journals account for 38.1% of citations. The top journals for the research

orientation as a whole are as follows:

Child Development	90 citations
Developmental Psychology	44 citations
Journal of Personality and Social Psychology	22 citations
Journal of Experimental Child Psychology	20 citations
Psychological Bulletin	20 citations

Judging from journal titles receiving citations from research-oriented documents, it appears that the focus is very strongly on developmental child psychology and psychology in general.

Interpretation-oriented documents referred to journal literature in 455 articles, or substantially less than research-oriented documents; only 20 journal titles can be identified for this group when four references or more are used to identify a journal title. The journal titles not identified account for 63.1% of the citations to journal literature in this orientation. Child Development accounts for only 4.8% of the citations, and it takes all of the 20 identified titles to account for 36.9% of the journal citations. It appears that the journal citations of this orientation are significantly more dispersed than the citations of the other orientations. Hence, a clear focus is hard to identify. The 20 journal titles and the citations received by each are listed in Table 44.

Practice-oriented documents, even with the expanded sample for the CIJE file, cite journals the least and contribute only 274 citations to journal articles in the citation pool. Using the measure of four or

Table 44. Interpretation Orientation Core Journals

Journal Titles	Citations
Child Development	22
Child Care Quarterly	19
Developmental Psychology	13
American Psychologist*	13
Journal of Educational Psychology*	12
Human Development	11
Journal of Nutrition Education*	9
Pediatrics*	9
American Journal of Orthopsychiatry*	7
Psychological Review*	7
Journal of Experimental Child Psychology*	6
American Journal of Clinical Nutrition*	6
Elementary School Journal	5
American Journal of Psychiatry*	5
Child Welfare	4
Journal of Child Psychology and Psychiatry and Allied Disciplines	4
Criminology*	4
International Journal of Psycho-Analysis*	4
Journal of the American Dietetic Association*	4
New Horizons in Education*	4

* Not indexed by ERIC/EECE

more citations, only 11 titles could be identified. However, Child Development accounts for 8.8% of the citations in practice-oriented documents. The 11 titles in this orientation account for 36.9% of citations to the identified journal titles, thus indicating a lesser dispersion of journal citations than in the interpretation orientation. The 11 identified titles and the citations received by each are shown in Table 45.

It must be recognized that when citations to journal literature are assessed for CIJE and RIE files without controlling for orientations, the data are not representative of the population. However, several things are suggested by the data in Table 78 in Appendix A. The top two journals are the same in both files. Child Development accounts for 12% of citations by RIE file documents and 9.2% of citations by CIJE file documents. Developmental Psychology accounts for 6.4% of citations in RIE file documents and 4.7% of citations in CIJE file documents. Although Journal of Experimental Child Psychology ranks third in the CIJE file, it is conspicuously absent from the identified journals in the RIE file. Child Care Quarterly, which ranks third in the RIE file, does not appear in the CIJE file. It was assumed that the journals accounting for approximately one-third of the citations in Bradford's Zone I are core journals. Table 46 lists these core journals for each file.

It appears that, although the CIJE file citations disperse across a greater number of journal titles than RIE file citations, citations to core journals are more focused. The CIJE file documents also appear to be more concerned with issues in psychology than the RIE file documents.

Table 45. Practice Orientation Core Journals

Journal Titles	Citations
Child Development	24
Developmental Psychology	15
Gifted Child Quarterly*	14
Family Economics Review*	10
Elementary School Journal	8
American Journal of Orthopsychiatry*	7
Young Children	6
Childhood Education	5
Instructor	4
American Psychologist*	4
IDA Consumer*	4

* Not indexed by ERIC/EECE

Table 46. CIJE and RIE Core Journals

Journal Title	Citations	
CIJE FILE		
Child Development	93	
Developmental Psychology	50	
Journal of Experimental Child Psychology	24	8 titles
Psychological Bulletin	19	33.2% of
Human Development	19	citations
Journal of Personality and Social Psychology	18	
Psychological Review*	18	
Journal of Educational Psychology*	17	
RIE FILE		
Child Development	43	
Developmental Psychology	22	
Child Care Quarterly	19	10 titles
American Psychologist*	13	32.3% of
American Journal of Orthopsychiatry*	12	citations
Family Economics Review*	10	
Journal of Nutrition Education*	9	
Elementary School Journal	8	
Pediatrics*	8	
American Journal of Obstetrics and Gynecology*	6	

* Not indexed by ERIC/EECE

The focus of the RIE file citations implies concern for children's well-being.

When citations to journal titles are divided between orientation/file subsets, the subsample sizes are greatly reduced; the procedure for identifying only those titles that received four or more citations no longer accounts for titles with one-third of citations in all the orientation/file subsets. Tables 79 - 81 in Appendix A display the titles that were identified and gives the count of citations received by an identified title and those that are dispersed among non-identified titles.

Among the research-oriented CIJE file documents, 20 journals accounted for 250 or 61.3% of the 408 citations. This approximates the first two Bradford zones. One hundred thirty-three citations, or approximately one-third are dispersed across the following three titles:

Child Development	74 citations
Developmental Psychology	41 citations
Journal of Experimental Child Psychology	18 citations

This list clearly indicates that research-oriented CIJE documents focus very strongly on psychology in their journal citation practices.

Research-oriented RIE file documents cited journal literature 106 times, but 71 citations (67.0%) were dispersed among non-identified titles. The 33.0% of citations (or Bradford's Zone I) are as follows:

Child Development	16 citations
Journal of Personality and Social Psychology	5 citations
American Journal of Obstetrics and Gynecology	5 citations
Journal of Child Language	5 citations
Journal of the American Medical Association	4 citations

The above list is dissimilar to that for the research orientation/CIJE subfile, although Child Development ranks first in both files, and, in fact, the percentage of citations to this top journal title is very close; Child Development accounts for 18.1% of CIJE citations and 15.1% of RIE citations.

The CIJE file interpretation-oriented documents show a greater dispersion across unidentified journal titles than the RIE documents (75.7%). Only 24.3% of the journal titles can be identified for the CIJE journal citations; all of these can be seen in Table 80 in Appendix A. Nine journals, however, account for 36.9% of the RIE file document journal citations. Unidentified journals account for 59% of RIE file citations. From the identified journal titles, it appears that this orientation embraces a much broader scope of interest than the research orientation.

The sample for practice-oriented CIJE file documents was increased because these documents do not cite much. Of the 102 citations to journal literature, 23.5% are given to three identifiable journal titles. No other journal titles could be identified because they were not cited four or more times. Most of the citations in practice

orientation were derived from the RIE file (879), but documents in this file do not cite journal literature as much as documents of other orientations, and 64.5% of journal citations are dispersed across non-identified journal titles. The identified titles can be seen in Table 81 in Appendix A. Eighteen percent of citations are to the same two top journal titles as in research-oriented CIJE file documents (i.e., Child Development and Developmental Psychology).

Of the 1,243 citations to journal articles 778 were received from CIJE file documents. These CIJE file documents were derived from a possible group of 30 journal titles that had been indexed by ERIC/EECE. The sampling did not tap all 30 of these possible titles. However, among the journal titles that had been cited four or more times, 12 titles coincided with those indexed by ERIC/EECE. Of the 412 journal titles cited by the overall sample, 68 received four or more citations, but only 15 emerged as recipients of four or more citations from one or more of these 12 journal titles indexed by ERIC. Table 82 in Appendix A gives the raw scores for the identified ERIC journal titles and the journals that received these citations. The body of the table displays only those scores that have been given or have received four or more citations. The right hand column includes all the references given by the identified ERIC CIJE file document and the percentage of citations contributed to the citation pool by that journal. The lowest lines give the same information for the cited journals.

The data in Table 47 are suggestive of self-citation and self-derivation when a comparison is made between the percentage of the total number of references a citing journal gives to itself or to

Table 47. Journal to Journal Citations

n = 778

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another journal, and to the percentage of the total number of citations the journal receives from itself and all other journals.

In Table 47, two percentage scores are displayed for each applicable intersection of two journal titles. The score to the left of the slash refers to the percentage of the total that the ERIC indexed journal title in the row gives to the journal in the intersecting column. The score to the right of the slash refers to the percentage of the total that the column title receives from itself or any other row title. Thus, reading a title from the "Citing ERIC Journals" row (e.g., Child Welfare), the percentage to the left of the slash indicates that Child Welfare gives 11.1% of its references to Child Welfare; the percentage to the right of the slash indicates that, of all journal citations received by Child Welfare, 71.4% are received from itself.

These percentages are derived from the data yielded by this sample only and cannot be generalized to how many citations a journal receives from other journals outside the parameters of this sample.

A comparison of Table 47 and Table 82 in Appendix A shows, for example, that Young Children cited other journals 98 times, but it was cited only 5 times, of which 4 were citations to itself. We can conclude that, within this sample, Young Children is not an important journal source.

Of the three top cited journals (Child Development, Developmental Psychology, and Journal of Experimental Child Psychology), Child Development is the most cited journal. However, it also must be noted that Child Development derives 41.9% of its citations from itself. Developmental Psychology cites itself and Child Development, but it is

cited more by Child Development than by itself. Journal of Experimental Child Psychology cites itself, but it cites Child Development four times as much.

The Important Authors and Titles

In many bibliometric studies, the most frequently cited authors and the most important titles are byproducts of interest. Data were gathered to identify: 1) those authors who were cited five or more times; and 2) those titles that were cited three or more times.

Piaget was the most frequently cited author by far. He has 19 different titles on the list. (For this overview, no distinction was made between journal article and book titles.) Table 48 gives authors' names in descending order of citations received. It also includes the total number of titles that are represented by the citations received.

The titles that were cited three or more times are listed in Table 49, which shows the orientations and the number of times each orientation cited the particular title. Of added interest may be the notations that show which orientations share a viewpoint in identifying a particular work as a literature source.

Non-Citing ERIC Documents

Documents without citations to previous works were found only in the interpretation and practice orientations. In these two orientations, the documents came from both the CIJE and RIE files. To determine the common characteristics of these non-citing documents, the pubtypes by

Table 48. Frequently Cited First Authors

Citations Received	Author	Titles Represented
35	Piaget, J.	19
10	Ainsworth, M.	4
8	Bloom, B.	4
8	Brazelton, T.	5
8	Bronfenbrenner, U.	6
8	Elkind, D.	7
8	Erikson, E.	5
8	Torrance, E.	7
8	Vygotsky, L.	5
7	Bandura, A.	6
7	Bowlby, J.	5
7	Brown, A. L.	7
7	Bruner, J.	5
7	Flavell, J.	5
7	Gewirtz, J.	6
7	Read, K.	1
6	Brainerd, C.	5
6	Pitcher, E.	2
6	Schaffer, H.	3
5	Baumrind, D.	4
5	Bower, T.	5

Table 48. (continued)

Citations Received	Author	Titles Represented
5	Broughton, J.	5
5	Frost, J.	4
5	Ginsburg, H.	1
5	Harlow, H.	5
5	Hildebrand, V.	1
5	Ilg, F.	2
5	Kagan, J.	4
5	Katz, L. G.	4
5	Lewis, M.	5
5	Lowenfeld, V.	2
5	Sroufe, L.	3
5	Watson, J.	4
5	Winer, B.	1

Table 49. Reference List of Titles and Number of Citations Received by Orientation

	Citations Received
Titles Receiving Seven Citations	
Piaget, J. (1952). Origins of intelligence in children. New York: International Universities Press.	RO:3; IO:4
Read, K. (1966). Nursery school: A human relationship laboratory. Philadelphia: Saunders Co.	PO:7
Titles Receiving Five Citations	
Bloom, B., et al. (1956). Taxonomy of educational objectives. In Handbook I: Cognitive domain. New York: David McKay.	RO:1; PO:4
Ginsburg, H. and Opper, S. (1969). Piaget's theory of intellectual development. Englewood, NJ: Prentice Hall.	RO:1; PO:4
Hildebrand, V. (1971). Introduction to early childhood education. New York: Macmillan.	RO:1; PO:4
Piaget, J. (1962). Play, dreams, and imitation in childhood. New York: Norton.	RO:2; PO:3
Pitcher, E. G., Lasher, M. G., Feinburg, S. G., and Braun, L. A. (1966). Helping young children learn. Columbus, OH: Charles E. Merrill.	PO:5
Winer, B. J. (1971). Statistical principles in experimental design. (2nd ed.). New York: McGraw-Hill.*	RO:5
Titles Receiving Four Citations	
Erikson, E. H. (1951). Childhood and society. New York: Norton.	IO:2; PO:2
Ilg, F. L. and Ames, L. B. (1974). Child behavior. London: Hamish Hamilton.	RO:1; IO:2; PO:1
Leeper, S. H., et al. (1968). Good schools for young children: A guide for working with three, four, and five year old children. New York: Macmillan.	PO:4
Lowenfeld, V. (1957). Creative and mental growth. (3rd ed.). New York: Macmillan.	PO:4

*It should be noted that this is the only title among those frequently cited that cannot be considered as part of the core literature of early and elementary childhood education.

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Table 49. (continued)

Titles Receiving Three Citations	Citations Received
Ainsworth, M. D. S., Bell, S.M. V., and Stayton, D. J. (1971). Individual differences in strange-situation behavior of one-year-olds. In H. Schaffer (ed.). The origins of human social relations. London: Academic Press.	RO:2; IO:1
Bowlby, J. (1969). Attachment and loss. In Attachment: Vol. 1 (pp. 309-313). New York: Basic Books.	RO:2; IO:1
Brazelton, T. B., Koslowski, B., and Main, M. (1974). Origins of reciprocity: The early mother-infant interaction. In M. Lewis and L. Rosenblum (eds.), The effect of the infant on its caregiver, pp. 49-76 New York: Wiley.	RO:3
Burgess, R. L. and Conger, R. D. (1978). Family interaction in abusive, neglectful, and normal families. Child Devlopment, 49, 1163-73.	RO:3
Clarke-Stewart, K. A. (1973). Interactions between mothers and their young children: Characterisitcs and consequences. Monographs of the Society for Research in Child Development, 38(153:6-7).	IO:2; PO:1
Coopersmith, S. (1967). The antecedents of self-esteem. San Francisco: Freeman.	PO:3
Gordon, T. (1975). PET: Parent effectiveness training. New York: Plume.	IO:1; PO:2
Holt, B. G. (1977). Science with young children. Washington, DC: National Association for the Education of Young Children.	PO:3
Inhelder, B. and Piaget, J. (1958). The growth of logical thinking from childhood to adolescence. New York: Basic Books.	RO:3
Lorton, M. B. (1972). Workjobs: Activity-centered learning for early childhood education. Reading: Addison-Wesley.	PO:3

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Table 49. (continued)

Titles Receiving Three Citations	Citations Received
Luria, A. R. (1961). The role of speech in the regulation of normal and abnormal behavior. Oxford: Pergamon.	RO:1; IO:2
Piaget, J. and Innelder, B. (1969). Psychology of the child. New York: Basic Books.	PO:3
Piaget, J. (1948). Moral judgement of the child. Glencoe, IL: Free Press.	RO:2; PO:1
Provence, S., Naylor, A., and Patterson, J. (1977). Challenge of daycare. New Haven, CT: Yale University Press.	IO:2; PO:1
Ross, H. and Sawhill, T. (1975). Time and transition: The growth of families headed by women. Washington, DC: Urban Institute.	RO:1; IO:1; PO:1
Schaffer, H. R. and Emerson, P. E. (1964). The development of social attachment in infancy. Monographs of the Society for Research in Child Development, 29(3:5-77).	RO:1; IO:1; PO:1
Taylor, B. (1964). A child goes forth. Provo, UT: Brigham Young University Press.	PO:3
Todd, V. E. Heffernan, H. (1970). Years before school: Guiding preschool children. (2nd ed.). New York: Macmillan.	PO:3
Vygotsky, L. (1962). Thought and language. Cambridge, MA: M.I.T. Press.	IO:1; PO:2
Werner, H. and Kaplan, B. (1963). Symbol formation. New York: Wiley.	RO:1; IO:1; PO:1

RO - Research Orientation

IO - Interpretation Orientation

PO - Practice Orientation

The numbers following the colons indicate how many times the citation was received in the citation sample from the given document sample of the orientation.

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which the documents were grouped in the orientations were identified. Additionally, for the documents coming from the CIJE file, the titles of journals from which non-citing articles came were identified.

Of the randomly selected 100 interpretation-oriented documents, 25 were without citations (12 from the CIJE file and 13 from the RIE file). The interpretation orientation is identified by six discriminating pubtypes (see Table 4), of which up to three may be given to each document. Of the 25 documents, 14 bore pubtype 120, identifying them as viewpoint documents. One of these viewpoint documents was coupled with pubtype 142 (evaluation report), one with pubtype 70 (information analyses), and one viewpoint document included both pubtype 70 and 140 (information analyses and general report). Nine documents were identified with pubtype 141 (descriptive reports), and one each with pubtype 70 (information analyses) and pubtype 142 (evaluative report).

It is conceivable that a viewpoint can be expressed in a written document without bibliographic documentation, although such a practice would tend to diminish its scholarly influence. Descriptive reports in education journals, especially those that report on specific classroom activities, tend not to include bibliographies. In fact, eight of the nine descriptive reports come from journals.

The journals that produced the non-citing articles in the interpretation orientation are:

Instructor (3)

Children Today (3)

Childhood Education (3)

Child Welfare (2)

Australian Journal of Early Childhood (1)

Of these, Instructor is a borderline trade magazine with a great deal of advertising for school and education related products. Its articles are generally short and illustrated. From its layout and content, one would assume it to be a non-scholarly periodical.

After the original sample of 100 ERIC documents was selected for practice orientation, of the 25 CIJE documents, 12 contained no references. The remaining 13 yielded only 121 citations. This necessitated using all of the CIJE articles in the population (102) in order to select 300 citations for the practice orientation CIJE citation sample.

Of the 75 RIE file documents selected, 34 had no references and of the 102 CIJE file documents, 56 had no references. These were analyzed for pubtypes.

Six pubtypes were used to discriminate between documents for this orientation (see Table 4), and all but pubtype 160 (test, evaluation instruments) were found for the non-citing documents. Of the 177 practice-oriented documents included in the extended sample, 90 had no citations. Of these, 41 documents bore pubtype 52 (classroom guide for teachers), 20 bore pubtype 55 (non-classroom guide for administrators, support staff, etc.), four bore both pubtypes 52 and 55, and seven bore

pubtypes 51 and 52. Pubtype 51 (classroom guide for learners) and pubtype 50 (general guide) were each the sole pubtype for seven documents. Four documents bore pubtype 90 (legal/legislative/regulatory materials).

Because no such pubtype analysis was performed on those documents that cited the work of others, conclusive remarks in regard to non-citing ERIC documents are not possible. However, it appears that classroom guides for teachers (pubtype 52) tend not to cite previous work in their own or related fields.

The journal titles from which the non-citing documents were drawn are:

Instructor (33)
Day Care and Early Education (16)
Childhood Education (2)
Adolescence (1)
Australian Journal of Early Childhood (1)
Child Welfare (1)
Elementary School Journal (1)
Young Children (1)

The journal Instructor has been discussed above. Day Care and Early Education is much like Instructor in advertising practice, format, and content, except that its intended audience is preschool teachers and administrators.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

Summary and Interpretation of Findings

This study selected a portion of the ERIC database to assess literature sources of elementary and early childhood education by using bibliometric methods. The ERIC database provides a unique opportunity to analyze document orientations by intended audience for both journal literature (the CIJE file of the ERIC database) and fugitive or unpublished literature (the RIE file of the ERIC database).

The ERIC document population identified for the study represents 30 months of input by the ERIC Clearinghouse on Elementary and Early Childhood Education. Those pubtypes that ERIC assigns to documents during indexing were used to group documents into research-, interpretation-, and practice-oriented categories. The attempt to group in this manner appears to have been successful; 94.9% of the documents fell into the three mutually exclusive sets. Only 3.3% of the documents bore pubtypes that overlapped orientations, and 1.8% bore pubtypes that were considered nondiscriminating.

Originally, 100 documents were randomly selected for each orientation. From each of these three sets of documents, 1,000 references were randomly selected. Because approximate proportions of CIJE and RIE file documents for each orientation were maintained, it appeared that practice-oriented CIJE file documents did not yield a sufficient number of references for the citation pool. This made it

necessary to include all of CIJE practice-oriented documents in the sample in order to obtain a sufficiently large citation sample from this subset.

The hypotheses are that: 1) research-oriented documents cite more literature, more recent literature, and draw more heavily on other disciplines than interpretation- or practice-oriented documents; and 2) interpretation-oriented documents cite more literature, more recent literature, and draw more heavily on other disciplines than practice-oriented documents. The differences between the orientations as to the extent of citation, citation age, and discipline dispersion of the citations supported the hypotheses in part only, but what emerged was a fairly consistent picture showing as many differences between the CIJE and RIE file documents within each orientation as between the orientations.

The differences between the files are not an unreasonable finding, although no firm conclusions can be drawn due to the fact that some of the sample orientation/file subsets contained very few cases. But, because the CIJE file represents published journal literature, it might be construed as the more scholarly of the two files. However, the assumption of this study was that orientations would override the file differences.

Given the identified population, the first finding was that there is an unequal distribution of research-, interpretation-, and practice-oriented documents. The total document population was 4,317. Of these, 5.1% were not included in the study because they failed to sort into mutually exclusive orientation groups. Fifty-four percent

were research-oriented documents, with 39.1% coming from the CIJE file and 14.9% from the RIE file. Interpretation-oriented documents constituted 31.4% of the population, with 19% and 12.4% coming from CIJE and RIE files, respectively. Practice-oriented documents constituted only 9.5% of the population, with 2.4% coming from the CIJE file and 7.1% from the RIE file. The percentage of practice-oriented documents is proportionately low and research-oriented journal literature appears proportionately overemphasized, judging from the 30 month input by the EECE Clearinghouse. This finding also suggests that the criticism that ERIC has little to offer practitioners may be well-founded. However, it may also suggest that the preponderance of journal literature and the relative lack of practice-oriented documents are due to a lack of practice-oriented education literature in elementary and early childhood education that meets ERIC's rather rigorous standards for acceptance.

As the citation sample was selected, it was noted that, although all research-oriented documents contained references, this was not the case with interpretation- and practice-oriented documents. Eighty percent of CIJE documents and 67% of RIE documents in the interpretation orientation contained references, indicating that the CIJE file in this orientation is more scholarly. This finding was the reverse of that for practice orientation, in which only 52% of CIJE file documents and 55% of RIE documents had references. This suggests that more than half of the journal literature intended for practitioners is undocumented. By this standard, the ERIC collection of fugitive documents for practitioners is more scholarly than that of CIJE documents. Reasons for such a large percentage of practice- and interpretation-oriented

documents failing to credit previous work might be found among the types of documents that are categorized under these orientations. For practice orientation, the substantive content of articles in such trade journals as the Instructor is marginal. These articles usually report on classroom activities with no allusions to theory, other practice, or general curriculum goals. Some of the viewpoint reports in interpretation orientation are impressionistic and, at times, ex cathedra pronouncements by educators. The guides are reports of communal efforts to solve problems that, as reports sometimes imply, are unique to that school or district. Nevertheless, it is clear that a portion of educational literature does not adhere to the norm of scholarship that requires the crediting of previous work in the field.

To test the hypotheses, the mean number of citations per document and the mean number of citations per page (adjusted for word density) were calculated. In either case, interpretation-oriented documents were found to cite more than research-oriented documents, and both of these cite more than practice-oriented documents. Since two different formats are represented by CIJE and RIE file documents, and the RIE file documents are less uniform in length, the per page citation estimate seems a more realistic measure when comparing orientation/file subsets.

Interpretation-oriented CIJE file documents cite the most (2.6 citations per page), followed by the research-oriented CIJE file (1.9 citations per page), and interpretation-oriented RIE file documents (1.5 citations per adjusted page). Practice-oriented CIJE and research-oriented RIE file documents average 1.1 citations per adjusted page. Practice-oriented RIE documents cite least (0.4 citations per

adjusted page)

The average citations per page for each orientation are: research - 1.6; interpretation - 2.0; and practice - 0.4. Although interpretation-oriented documents cite most, CIJE file documents consistently cite more within each orientation. Interpretation-oriented CIJE documents cite most extensively. This is particularly important in light of the fact that only 80% of CIJE interpretation-oriented documents cite, and that this average was calculated with non-citing documents included. Interpretation-oriented RIE file documents average 1.5 citations per page. This citation level is high given that only 67% of the RIE interpretation-oriented documents cite and that the average was calculated using all the documents in the subset. Thus, it appears that interpretation-oriented documents cite extensively when they do cite. The non-citing documents in this orientation are primarily viewpoint and descriptive reports, but no attempt was made to identify the types of documents that cited most extensively. It is possible that interpretation-oriented documents, at least in part, could be review articles or reports, which summarize the state of the art in some subfield and thus cite extensively.

Price (1970) indicates that papers with large numbers of references are not necessarily scholarly papers but review papers which condense recent literature. However, one of the more bothersome aspects of this study for any of the orientations is the excessively high variance found for citations. Since the orientations were categorized through the use of pubtypes which may not have been correctly grouped to identify intended audience orientations, or are not correctly defined and

assigned for purposes of such document grouping, the possibility exists that the variance is due to these errors rather than inherent characteristics of citation practice. Bibliometric literature, when it has implied intended audience orientations, has discussed orientations of academicians, technologists and, at times, policy makers and administrators. It is possible that educational literature can be grouped for researchers and for practitioners, and that the portion that was conceived as a bridge between the two (i.e., interpretation orientation) requires the identification of some other variables to sort it between research and practice orientations.

Assessment of median citation age without differentiating between file subsets in the orientations showed that practice-oriented documents cited the most recent literature and that research-oriented documents cited the oldest literature. The citation samples of research-, interpretation-, and practice-oriented documents yielded median citation ages of 6.29, 5.78, and 5.33 years respectively. This does not support the hypothesis that the research orientation cites the most recent literature.

In the CIJE file, the median citation ages for research-, interpretation-, and practice-oriented documents are 6.6, 6.2, and 6.3 years, respectively. The RIE file documents cite more recent literature; the median citation ages in this file are: research - 5.3 years; interpretation - 5.3 years; and practice - 5.2 years. The difference of approximately one year between the median citation ages of the files might be accounted for by the time lag between the writing and the publication of journal literature. However, the differences between

the median citation ages of the orientations in either file are so slight as to be insignificant. All three orientations in each file cite literature within the norm of median citation ages for social science.

Since recent literature has been identified as literature published in the past five years (Price, 1970; Meadows, 1974), proportions of references falling in this age range were identified for the orientations, files and orientation/file subsets. These findings confirmed the differences that were found when median citation ages were assessed. All of the sample subsets cited within the 40% range that has been suggested by Meadows as typical of the social sciences. This implies that elementary and early childhood education literature has a research front, and the producers of its literature are actively aware of it. Nevertheless, caution should be exercised in lending too much credence to this finding since substantial percentages of interpretation- and practice-oriented documents failed to credit previous work and therefore had no citations.

In retrospect, the citation age findings for the three orientations suggest two concepts discussed in bibliometrics and possibly operational in this study. The concept of a research front as defined by the citations to recent literature does not necessarily imply scholarliness. It implies that there is a recent literature of which document producers are aware. This recent literature is in part ephemeral and topical and, in part, solid and research-oriented. Different parts of this recent literature and in different proportions may actually constitute citations for differently oriented papers.

Closely associated with the recent literature concept is the literature decay concept. If recent literature predominates and little of the archival is used for citations, it also implies a measure of decay for the literature. This can be interpreted that the subject field is growing and changing more or less rapidly, but it also can suggest that the literature is ephemeral, transient and of topical interest.

Research orientation, as perceived in this study, implies scholarliness and therefore requires a more careful adherence to those norms that are accepted for scholarly papers--i.e., awareness of the research front, regard for historical perspectives, some quantitative data to report findings, and a sense of comprehensiveness even for narrowly defined problem areas.

Practice orientation, unless drawing on previously reported practice, may not tend to cite because the norm of scholarship that includes crediting previous work in the field is not as firmly established for non-academicians. This might explain the substantial percentage of non-citing practice-oriented documents. The literature of this orientation, when it cites, could be drawing on documents of topical interest. Historical perspectives would be less valued and almost superfluous in the commonly found journal articles and short reports in the ERIC database.

Interpretation-oriented documents, if they are review articles that summarize the state of the art on some topic, would primarily cite the more recent literature. If they are bridge papers, recency in those areas that need to be linked would be of greater importance than

historical perspectives. Thus, this type of literature, whether it summarizes recent research or gives viewpoints on current research or practice, would be less likely than research papers to delve in archival literature for its citations.

RIE documents cited more recent literature than CIJE documents. As previously noted, CIJE documents, because they represent published literature, may be the more scholarly. However, it can also be presumed that the time lag between writing and publication may account for the approximately one year difference in the median citation ages for the orientations and the orientation/file subsets.

The findings for discipline dispersion supported the hypotheses. Research-oriented documents showed the broadest scope in their citation practices and practice-oriented documents the narrowest. Here, too, the differences between the CIJE and RIE documents within each orientation were more dramatic than those between orientations, with a consistently greater dispersion in the CIJE file. For the overall citation sample, research, interpretation, and practice-oriented documents, disciplines other than elementary and early childhood education accounted for 94.4%, 93.5%, and 79% of citations, respectively. The difference between research orientation and interpretation orientation is not great. Differences between CIJE and RIE documents were greater for research- and practice-oriented than for interpretation-oriented documents.

For the research-oriented documents, the file differences are particularly dramatic. Only 1.3% of the CIJE file research-oriented document citations are to the home discipline, but 16.7% of the documents of the same orientation in the RIE file are to elementary and

early childhood education. Only the practice orientation/RIE file documents cite the home discipline more than research-oriented RIE file documents. The difference between CIJE and RIE file documents in research orientation is large, and it would be interesting to know if the clearinghouse is making additional effort to compensate the lack of focus of the CIJE file on education by locating research-oriented fugitive documents with greater education orientation.

The differences between discipline dispersion of interpretation-oriented documents are less pronounced. Of the CIJE file citations, 96.4% are to disciplines other than the home discipline; the corresponding figure for the RIE file is 90%. The CIJE file is more dispersed, and the documents of neither file are particularly focused on the home discipline.

The least dispersion occurs in practice orientation, in which 84.3% of citations in the CIJE file and 77.1% of citations in the RIE file are to disciplines other than the home discipline. Overall, however, only 9.5% of the input of the clearinghouse was identified as practice-oriented documents; three-fourths of these are from the RIE file. Nevertheless, this orientation exhibits the greatest concern with the home discipline in its citations.

Given the scant crediting of elementary and early childhood education by a large portion of documents entered in the database by the ERIC Clearinghouse on Elementary and Early Childhood Education, an assessment was made of those disciplines that figured highly as sources for citations.

The top-cited disciplines were considered by orientation (see Table 31). Twenty-three percent of all citations in research-oriented documents were to developmental child psychology. Psychology received 16.8% of these citations and sociology received 14.9%. Practice orientation shows a clear focus on elementary and early childhood education, which receives 21% of its citations. Although interpretation-oriented documents cite many of the same disciplines as research-oriented documents (specifically developmental child psychology, psychology, and sociology), they do not seem to focus as strongly on these disciplines.

When orientation/file subsets were examined, a clear focus was identified only for the research-oriented/CIJE file documents, which give 25.9% of their citations to developmental child psychology. The RIE file subset shows no such concentration. Practice orientation clearly focuses on elementary and early childhood education only in the RIE file. In the CIJE file, the main citation sources are more diffused between general education and elementary and early childhood education. Interpretation orientation in the CIJE file appears to be concerned mostly with psychology and, to a lesser degree, with sociology and developmental child psychology.

When the psychology subfields (developmental child psychology, educational psychology, and psychology) and the education subfields (elementary and early childhood education and general education) are combined, the reliance on psychology is more notable for CIJE documents, particularly in research and interpretation orientations. Citations to education exceed citations to psychology only for practice-oriented

documents.

If citation sources from psychology are more indicative of the researcher's domain, and sources from education are more indicative of the practitioner's domain, the CIJE literature is more research-oriented. However, from the point of view of discipline dispersion, what emerges when the top cited disciplines by each orientation/file subset are assessed is that differences are greater between the files within each orientation than between the orientations. Developmental child psychology is an extremely important citation source, given the high percentage of CIJE file documents that are grouped with research and interpretation orientations. The home discipline is a very limited citation source. Although practice-oriented documents clearly focus on elementary and early childhood education, the overall proportion of such documents is only 9.4%.

These findings are not at variance with previous studies of social science citations. Discipline dispersion has been analyzed previously by researchers like Earle and Vickery (1969) who found that social sciences cite greatly outside their own fields. For education they found that 36% of citations were to education and 11% to psychology, the remainder widely scattered. The Bath University Library study (1980) found that in journal literature education cites education 33% and in monograph literature 56%; however, they looked at education as a whole rather than at one of its subfields. Barron and Narin (1972), in a study of journal literature that identified child development literature subsets, found that psychology and specifically experimental psychology

were the dominant sources for citations. They also found that elementary education and research depend greatly on educational psychology. Narin and Garside (1972) also found that education relies heavily on psychology for its citations. Thus, in the light of previous findings, the substantial reliance on psychology is not unreasonable. In order to serve its patrons more comprehensively, ERIC may wish to consider expanding its acquisition of documents in those psychology subfields that serve as literature sources to its documents.

Although the findings for citations to education are lower in this study than in Earle and Vickery's and the Bath University Library study, it should be noted that the input of the ERIC/EECE clearinghouse as delineated by ERIC 'Scope of Interest' notes (ERIC, 1980) and noted in the discussion in Chapter 2 (pp. 14-15) of this study is not truly comprehensive of elementary and early childhood education documents in the ERIC database. Other ERIC clearinghouses are specifically designated to select and enter in the database curriculum related documents. Given the fact that ERIC/EECE is precluded from entering documents relating to specific curricula such as reading, mathematics, science, and social studies, it is not unusual that, in this study, practice-oriented documents are a relatively small portion of the input and that a higher percentage of citations to education are not found in the citation sample.

The importance of psychology and its subfields as citation sources agrees in principle with other studies. The high degree to which they serve as literature sources is not surprising in view of ERIC/EECE 'Scope of Interest' notes.

Recommendations and Limitations

One of the major difficulties encountered in this study was that the sample size was small. The original assumption was that differences between orientations would override differences between CIJE and RIE file documents within each orientation. However, the indications are that published journal literature, such as encountered in the CIJE file, is different from RIE file documents not only in format, but also in subject matter, as indicated by the analyses of discipline dispersion. Thus, given the proportions of CIJE and RIE files for each orientation, some of the subsamples representing one or the other files for an orientation were too small. If document orientations are to be studied, a sufficiently large sample of documents has to be drawn from each orientation to yield a citation sample that represents each file adequately.

In retrospect, a careful classification of those ERIC documents that provided references would have allowed a more focused analysis of discipline dispersion. This omission in the original design of the study is particularly regretable in view of the heavy concentaration of cited documents in disciplines other than education. These findings suggest that significant portions of the ERIC/EECE database may be classifiable with some subfield of psychology or sociology rather than with education. However, without the prior classification of the sampled ERIC documents, this remains a supposition.

Only in overall citation practice could the three orientations be clearly distinguished. The research-oriented documents credit previous

work, but not all interpretation- and practice-oriented documents do so. However, more interpretation-oriented documents credit previous work than do practice-oriented documents. In fact, the proportion of documents in these two orientations that do not cite is high; therefore, in a study of citation practices, such non-citing documents are not included. Because a substantial portion of the literature on elementary and early childhood education identified with interpretation and practice orientations is without references, citation analysis cannot be the primary method of analyses for these documents. In order to study this literature, similarities and differences between citing and non-citing documents have to be identified for each orientation/file subset. Non-citing documents should be analyzed for implied citations as well as for differences and similarities in substantive content between citing documents for each orientation/file subset.

Differences were found between the orientation/file subsets in the type of publication format preferred in citations as well as the preferred format for cited documents associated with specific disciplines. Since the RIE file documents cite more education than CIJE file documents (at least in research orientation), it would be of interest to know how many of these citations make reference to educational research, educational practice, and theoretical treatises, and to what extent. Such an assessment would require analyzing each education reference in the context of the citing document.

A very large portion of the documents, particularly in the CIJE file, deals with child development, which identifies more closely with psychology than with education. This, as represented by

research-oriented CIJE file documents, appears to constitute a group of documents that are intended for an audience of other researchers in child development and are certainly at variance with such documents as educational guides, which are more clearly intended for practitioners in the field of education. Although some of the citations analyzed for practice-oriented documents are to child development, it is not clear at all if these refer to original research or to summary state of the art documents. In order to assess flow of information between these orientations, extensive research that addresses types of information exchanged between orientations is needed.

The findings of this study suggest that, from an intended audience point of view, at least two distinct types of documents exist: research- and practice-oriented. The group of documents identified as interpretation-oriented may, in fact, be sufficiently similar to research-oriented documents that the majority of them could be considerd as part of the research orientation.

Because the primary mode of searching ERIC is on subject descriptors without the inclusion of pubtypes, it would seem that the research-oriented audience could undervalue the scholarliness of ERIC content if a sufficient number of practice-oriented documents were retrieved. Conversely, the practice-oriented audience could be disappointed if too many statistically complex research papers were retrieved when the need was for a practical education suggestion that is readily applicable in the field. ERIC has long debated the feasibility of partitioning its files. Presently there is a pilot project underway to establish a school practice file. This appears to be a sound

solution that could lead to better defined educational resource collections that are ultimately able to serve both the practitioner and the academician more effectively.

From the findings in discipline dispersion, the enormous value of some of the subfields of psychology (such as educational psychology, and developmental child psychology) as literature sources is clear. It is this investigator's impression that ERIC assumes that psychology will be adequately covered by the Psychological Abstracts database, and that there is no need for ERIC to duplicate the effort. However, certain aspects of clinical, experimental, developmental and educational psychology are such essential resources for educators that they belong, albeit selectively, in education's own database. Because journal literature has been identified as the most important citation source (at least for the research and interpretation orientations), each clearinghouse should identify the core journals that serve as citation sources for its documents and, unless another clearinghouse indexes these journals cover-to-cover, make every effort to index them at least selectively.

Several limitations of this investigation should be noted to guide other researchers who wish to pursue citation analyses to assess educational document characteristics.

If the ERIC database or some subset of it is to serve as the population, descriptors should be used to identify all the documents held by ERIC for a given field or subject area. There are too many overlapping responsibilities for document selection among the clearinghouses to permit comprehensivenes through the input of only one

clearinghouse.

A larger sample of ERIC documents and citations is recommended unless the study defines the particular area to be studied more narrowly.

If the study is as broadly conceived as this, the documents that contribute citations should be classified. If such classification creates too many subgroups, the need for a much larger sample is a certainty.

The types of documents that were identified as practice oriented can only be analyzed partially through citations because too many of these documents fail to cite. However, if citation analysis is used in conjunction with other methods, such as in-context verification of implied citations or content analysis, citation analysis should not be overlooked as a method in the investigation of subject relatedness in professional literature.

APPENDIX A

TABLES 50 - 82

Table 50. Citation Count by Orientation

n = 300

Citation Count	Research			Interpretation			Practice		
	Abs. Freq.	Freq. Count %	Cum. Freq. %	Abs. Freq.	Freq. Count %	Cum. Freq. %	Abs. Freq.	Freq. Count %	Cum. Freq. %
0				25	25	25	46	46	46
1-5	11	11	11	17	17	42	13	13	59
6-10	13	13	24	9	9	51	13	13	72
11-15	17	17	41	9	9	60	6	6	78
16-20	21	21	62	9	9	69	5	5	83
21-25	13	13	75	4	4	73	4	4	87
26-30	7	7	82	5	5	78	3	3	90
31-35	7	7	89	5	5	83			
36-40	5	5	94				5	5	95
41-45									
46-50	4	4	98	3	3	86	1	1	96
51-55	1	1	99	2	2	88			
56-60				3	3	91			
61-65				1	1	92	1	1	97
66-70	1	1	100						
71-75							1	1	98
76-80									
81-85				1	1	93	1	1	99
86-90				1	1	94			
91-95				1	1	95			
96-100									
101-105									
106-110				1	1	96			
111-115				1	1	97			
116-120				2	2	99			
. .									
. .									
. .									
236-240				1	1	100			
. .									
. .									
. .									
306-310	—	—		—	—		1	1	100
	100	100		100	100		100	100	

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Table 51. Citation Count by CIJE and RIE Files

n = 300

Citation Count	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Cum. Freq. %	RIE Abs. Freq.	RIE Freq. Count %	RIE Cum. Freq. %
0	24	15.2	15.2	47	33.1	33.1
1-5	23	14.6	29.8	18	12.7	45.8
6-10	20	12.7	42.5	15	10.6	56.4
11-15	21	13.3	55.8	11	7.7	64.1
16-20	22	13.9	69.7	13	9.2	73.3
21-25	12	7.6	77.3	9	6.3	79.6
26-30	10	6.3	83.6	5	3.5	83.1
31-35	8	5.1	88.7	4	2.8	85.9
36-40	6	3.8	92.5	4	2.8	88.7
41-45						
46-50	3	1.9	94.4	5	3.5	92.2
51-55	2	1.3	95.7	1	.7	92.9
56-60	1	.6	96.3	2	1.4	94.3
61-65	1	.6	96.9	1	.7	95.0
66-70				1	.7	95.7
71-75				1	.7	96.4
76-80						
81-85	1	.6	97.5	1	.7	97.1
86-90				1	.7	97.8
91-95	1	.6	98.1			
96-100						
101-105						
106-110				1	.7	98.5
111-115	1	.6	98.7			
116-120	2	1.3	100.0			
. . .						
236-240				1	.7	99.2
. . .						
306-310	—	—		1	.7	99.9
	158	100.0		142	99.9	

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Table 52. Research Orientation Citation Count by File

n = 100

Citation Count	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Cum. Freq. %	RIE Abs. Freq.	RIE Freq. Count %	RIE Cum. Freq. %
0						
1-5	6	8.3	8.3	5	17.9	17.9
6-10	10	13.9	22.2	3	10.7	28.6
11-15	14	19.4	41.6	3	10.7	39.3
16-20	14	19.4	61.0	7	25.0	64.3
21-25	9	12.5	73.5	4	14.3	78.6
26-30	6	8.3	81.8	1	3.6	82.2
31-35	5	6.9	88.7	2	7.1	89.3
36-40	5	6.9	95.6			
41-45						
46-50	2	2.8	98.4	2	7.1	96.4
51-55	1	1.4	99.8			
56-60						
61-65						
66-70				1	3.6	100.0
71-75						
76-80						
81-85						
86-90						
91-95						
96-100						
101-105						
106-110						
111-115						
116-120						
. .						
. .						
. .						
236-240						
. .						
. .						
. .						
306-310						
	72	99.8		28	100.0	

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Table 53. Interpretation Orientation Citation Count by File

n = 100

Citation Count	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Cum. Freq. %	RIE Abs. Freq.	RIE Freq. Count %	RIE Cum. Freq. %
0	12	19.7	19.7	13	33.3	33.3
1-5	14	23.0	42.7	3	7.7	41.0
6-10	5	8.2	50.9	4	10.3	51.3
11-15	5	8.2	59.1	4	10.3	61.6
16-20	6	9.8	68.9	3	7.7	69.3
21-25	3	4.9	73.8	1	2.6	71.9
26-30	4	6.6	80.4	1	2.6	74.5
31-35	3	4.9	85.3	2	5.1	79.6
36-40						
41-45						
46-50	1	1.6	86.9	2	5.1	84.7
51-55	1	1.6	88.5	1	2.6	87.3
56-60	1	1.6	90.1	2	5.1	92.4
61-65	1	1.6	91.7			
66-70						
71-75						
76-80						
81-85	1	1.6	93.3			
86-90				1	2.6	95.0
91-95	1	1.6	94.9			
96-100						
101-105						
106-110				1	2.6	97.6
111-115	1	1.6	96.5			
116-120	2	3.3	99.8			
. .						
. .						
. .						
236-240				1	2.6	100.2
. .						
. .						
. .						
306-310						
	61	99.8		39	100.2	

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Table 54. Practice Orientation Citation Count by File

n = 100

Citation Count	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Cum. Freq. %	RIE Abs. Freq.	RIE Freq. Count %	RIE Cum. Freq. %
0	12	48.0	48.0	34	45.3	45.3
1-5	3	12.0	60.0	10	13.3	58.6
6-10	5	20.0	80.0	8	10.7	69.3
11-15	2	8.0	88.0	4	5.3	74.6
16-20	2	8.0	96.0	3	4.0	78.6
21-25				4	5.3	83.9
26-30				3	4.0	87.9
31-35						
36-40	1	4.0	100.0	4	5.3	93.2
41-45						
46-50				1	1.3	94.5
51-55						
56-60						
61-65				1	1.3	95.8
66-70						
71-75				1	1.3	97.1
76-80						
81-85				1	1.3	98.4
86-90						
91-95						
96-100						
101-105						
106-110						
111-115						
116-120						
. . .						
236-240						
. . .						
306-310	—	—		1	1.3	99.7
	25	100		75	99.7	

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Table 55. Citation Ages by Orientation

n = 3,179

Age Intervals	Orientation								
	Research			Interpretation			Practice		
	n	%	Cum. %	n	%	Cum. %	n	%	Cum. %
0-1	98	9.8	9.8	114	11.4	11.4	107	9.1	9.1
2-3	200	20.0	29.8	188	18.8	30.2	269	22.8	31.9
4-5	151	15.1	44.9	177	17.7	47.9	208	17.6	49.5
6-7	135	13.5	58.4	138	13.8	61.7	177	15.0	64.5
8-9	95	9.5	67.9	80	8.0	69.7	129	10.9	75.4
10-11	66	6.6	74.5	79	7.9	77.6	78	6.6	82.0
12-13	60	6.0	80.5	48	4.8	82.4	47	4.0	86.0
14-15	39	3.9	84.4	31	3.1	85.5	33	2.8	88.8
16-17	26	2.6	87.0	34	3.4	88.9	26	2.2	91.0
18-19	22	2.2	89.2	17	1.7	90.6	22	1.9	92.9
20-21	16	1.6	90.8	20	2.0	92.6	12	1.0	93.9
22-23	21	2.1	92.9	10	1.0	93.6	19	1.6	95.5
24+	71	7.1	100.0	64	6.4	100.0	52	4.4	99.9

Table 56. Citation Age by CIJE and RIE Files

n = 3,179

	File					
	CIJE			RIE		
Age Intervals	n	%	Cum. %	n	%	Cum. %
0-1	128	8.2	8.2	191	11.8	11.8
2-3	300	19.1	27.3	357	22.2	34.0
4-5	242	15.5	42.8	294	18.3	52.3
6-7	223	14.2	57.0	227	14.1	66.4
8-9	141	9.0	66.0	163	10.2	76.6
10-11	125	8.0	74.0	98	6.1	82.7
12-13	89	5.7	79.7	66	4.1	86.8
14-15	59	3.7	83.4	44	2.8	89.6
16-17	48	3.1	86.5	38	2.4	92.0
18-19	36	2.3	88.8	25	1.5	93.5
20-21	31	2.0	90.8	17	1.1	94.6
22-23	34	2.2	93.0	16	1.0	95.6
24+	113	7.2	100.2	74	4.6	100.2

Table 57. Research Orientation Citation Ages by File

n = 1,000

	File					
	CIJE			RIE		
Age Intervals	n	%	Cum. %	n	%	Cum. %
0-1	57	7.9	7.9	41	14.6	14.6
2-3	140	19.5	27.4	60	21.3	35.9
4-5	107	14.9	42.3	44	15.7	51.6
6-7	105	14.6	56.9	30	10.7	62.3
8-9	67	9.3	66.2	28	10.0	72.3
10-11	51	7.1	73.3	15	5.3	77.6
12-13	47	6.5	79.8	13	4.6	82.2
14-15	28	3.9	83.7	11	3.9	86.1
16-17	18	2.5	86.2	8	2.8	88.9
18-19	15	2.1	88.3	7	2.5	91.4
20-21	14	1.9	90.2	2	.7	92.1
22-23	17	2.4	92.6	4	1.4	93.5
24+	53	7.4	100.0	18	6.4	99.9

Table 58. Interpretation Orientation Citation Ages by File

n = 1,000

	File					
	CIJE			RIE		
Age Intervals	n	%	Cum. %	n	%	Cum. %
0-1	50	9.1	9.1	64	14.2	14.2
2-3	105	19.1	28.2	83	18.5	32.7
4-5	91	16.5	44.7	86	19.1	51.8
6-7	73	13.3	58.0	65	14.4	66.2
8-9	41	7.5	65.5	39	8.7	74.9
10-11	46	8.3	73.8	33	7.3	82.2
12-13	30	5.5	79.3	18	4.0	86.2
14-15	21	3.8	83.1	10	2.2	88.4
16-17	22	4.0	87.1	12	2.7	91.1
18-19	11	2.0	89.1	6	1.3	92.4
20-21	14	2.5	91.6	6	1.3	93.7
22-23	9	1.6	93.2	4	.8	94.5
24+	37	6.7	99.9	24	5.3	99.8

Table 59. Practice Orientation Citation Ages by File

n = 1,179

	File					
	CIJE			RIE		
Age Intervals	n	%	Cum. %	n	%	Cum. %
0-1	21	7.0	7.0	86	9.8	9.8
2-3	55	18.3	25.3	214	24.3	34.1
4-5	44	14.7	40.0	164	18.6	52.7
6-7	45	15.0	55.0	132	15.1	67.8
8-9	33	11.0	66.0	96	10.9	78.7
10-11	28	9.3	75.3	50	5.7	84.4
12-13	12	4.0	79.3	35	4.0	88.4
14-15	10	3.3	82.6	23	2.6	91.0
16-17	8	2.7	85.3	18	2.0	93.0
18-19	10	3.3	88.6	12	1.4	94.4
20-21	3	1.0	89.6	9	1.0	95.4
22-23	8	2.7	92.3	11	1.3	96.7
24+	23	7.7	100.0	29	3.3	100.0

Table 60. Discipline Dispersion of Citations by Orientations

n = 3,179

Discipline	Research			Interpretation			Practice		
	Abs. Freq.	Freq. Count %	Rank	Abs. Freq.	Freq. Count %	Rank	Abs. Freq.	Freq. Count %	Rank
General Works	1	.1	24.5	2	.2	22.5			
Philosophy	15	1.6	11	23	2.3	6.5	2	.2	22.5
Psychology	168	16.8	2	132	13.2	3	45	3.8	9
History	1	.1	24.5	1	.1	25	3	.2	22.5
Anthropology	7	.7	15	3	.3	19	4	.4	16
Recreation	9	.9	14	8	.8	15	27	2.3	11
Social Science	1	.1	24.5	3	.3	19			
Business/Economics	11	1.1	12	23	2.3	11	47	4.0	8
Sociology	149	14.9	3	137	13.7	2	133	11.3	3
Political Science	1	.1	24.5	7	.7	16	4	.3	18
Law	2	.2	19.5	9	.9	14	4	.3	18
Elementary and Early Childhood Education	56	5.6	7	65	6.5	9	248	21.0	1
Educational Psychology	74	7.4	5	95	9.5	5	73	6.2	7
Education (General)	31	3.1	8	68	6.8	8	134	11.4	2
Music	1	.1	24.5				3	.2	22.5
Art	5	.5	16	3	.3	19	16	1.4	13
Language/Linguistics	69	6.9	6	26	2.6	10	20	2.0	12
Literature	2	.2	19.5	1	.1	25	40	3.4	10
Science (General)	3	.3	18	1	.1	25	4	.3	18
Mathematics	19	1.9	10				2	.2	22.5
Physics							1	0	26
Natural History/ Biology	4	.4	17	14	1.4	13	3	.2	22.5
Zoology	10	1.0	13	16	1.6	12	3	.2	22.5
Developmental Child Psychology	230	23.0	1	120	12.0	4	129	10.9	4
Medicine	100	10.0	4	142	14.2	1	106	9.0	5
Technology	1	.1	24.5	2	.2	22.5			
Engineering	1	.1	24.5	3	.3	19	13	1.1	15
Home Economics	27	2.7	9	93	9.3	6.5	100	8.5	6
Bibliography Library/Science	1	.1	24.5	3	.3	19	15	1.3	14

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Table 61. Discipline Dispersion of Citations by CIJE and RIE Files

n = 3,179

Discipline	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Rank	RIE Abs. Freq.	RIE Freq. Count %	RIE Rank
General Works	3	.2	24.5			
Philosophy	32	2.6	10	9	.6	16.5
Psychology	252	16.1	2	93	5.8	7
History	4	.3	22	1	.1	26.5
Anthropology	8	.5	18	6	.4	18.5
Recreation	8	.5	18	36	2.2	11
Social Science	3	.2	24.5	1	.1	26.5
Business/Economics	13	.8	15	68	4.2	9
Sociology	221	14.1	3	198	12.3	2
Political Science	9	.6	16	3	.2	22
Law	6	.4	20	9	.6	16.5
Elementary and Early Childhood Education	76	4.8	7	293	18.2	1
Educational Psychology	160	10.2	4	82	5.1	8
Education (General)	97	6.2	6	136	8.4	6
Music	1	.1	27	3	.2	22
Art	4	.3	22	20	1.2	12
Language/Linguistics	72	4.6	8	43	2.7	10
Literature	29	1.8	11	14	.9	14
Science (General)	5	.3	22	3	.2	22
Mathematics	17	1.1	13.5	4	.2	22
Physics				1	.1	26.5
Natural History/ Biology	18	1.1	13.5	3	.2	22
Zoology	23	1.5	12	6	.4	18.5
Developmental Child Psychology	288	18.4	1	191	11.9	4
Medicine	155	9.9	5	193	12.0	3
Technology	1	.1	27	2	.1	26.5
Engineering	1	.1	27	16	1.0	13
Home Economics	55	3.5	9	165	10.2	5
Bibliography Library/Science	8	.5	18	11	.7	15

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Table 62. Research Orientation Discipline Dispersion of Citations by File

n = 1,000

Discipline	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Rank	RIE Abs. Freq.	RIE Freq. Count %	RIE Rank
General Works	1	.1	22			
Philosophy	14	1.9	9	2	.7	13
Psychology	128	17.8	2	40	14.2	3
History	1	.1	22			
Anthropology	6	.8	13	1	.4	16.5
Recreation				9	3.2	9
Social Science	1	.1	22			
Business/Economics	5	.7	14	6	2.1	11
Sociology	118	16.4	3	31	11.0	4
Political Science	1	.1	22			
Law	1	.1	22	1	.4	16.5
Elementary and Early Childhood Education	9	1.3	11	47	16.7	1
Educational Psychology	59	8.2	5	15	5.3	8
Education (General)	7	1.0	12	24	8.5	6
Music	1	.1	22			
Art	3	.4	16.5	2	.7	13
Language/Linguistics	46	6.4	6	23	8.2	7
Literature	1	.1	22	1	.4	16.5
Science (General)	3	.4	16.5			
Mathematics	17	2.4	8	2	.7	13
Physics						
Natural History/ Biology	4	.6	15			
Zoology	10	1.4	10			
Developmental Child Psychology	186	25.9	1	44	15.7	2
Medicine	75	10.4	4	25	8.9	5
Technology	1	.1	22			
Engineering	1	.1	22			
Home Economics	20	2.8	7	7	2.5	10
Bibliography Library Science				1	.4	16.5

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Table 63. Interpretation Orientation
Discipline Dispersion of Citations by File

n = 1,000

	CIJE			RIE		
Discipline	Abs. Freq.	Freq. Count %	Rank	Abs. Freq.	Freq. Count %	Rank
General Works	2	.4	17.5			
Philosophy	16	2.9	10	7	1.6	11.5
Psychology	108	19.6	1	24	5.3	8
History	1	.2	21			
Anthropology	2	.4	17.5	1	.2	20
Recreation				8	1.8	10
Social Science (General)	2	.4	17.5	1	.2	20
Business/Economics	7	1.3	13	16	3.6	9
Sociology	72	13.1	2	65	14.4	3
Political Science	6	1.1	14	1	.2	20
Law	5	.9	15	4	.9	13
Elementary and Early Childhood Education	20	3.6	8	45	10.0	5
Educational Psychology	68	12.4	4	27	6.0	7
Education (General)	32	5.8	6	36	8.0	6
Music						
Art				3	.7	15
Language/Linguistics	20	3.5	9	6	1.6	12
Literature	1	.2	21			
Science (General)	1	.2	21			
Mathematics						
Physics						
Natural History/ Biology	13	2.4	11.5	1	.2	20
Zoology	13	2.4	11.5	3	.7	15
Developmental Child Psychology	71	12.9	3	49	10.9	4
Medicine	67	12.2	5	75	16.7	1
Technology				2	.4	17
Engineering				3	.7	15
Home Economics	22	4.0	7	71	15.8	2
Bibliography/ Library Science	2	.4	17.5	1	.2	20

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Table 64. Practice Orientation Discipline Dispersion of Citations by File

n = 1,179

Discipline	CIJE Abs. Freq.	CIJE Freq. Count %	CIJE Rank	RIE Abs. Freq.	RIE Freq. Count %	RIE Rank
General Works						
Philosophy	2	.7	12.5			
Psychology	16	5.3	7	29	3.3	9
History	2	.7	12.5	1	.1	24.5
Anthropology				4	.5	16.5
Recreation	8	2.7	10	19	2.2	10
Social Science (General)						
Business/Economics	1	.3	15	46	5.2	7
Sociology	31	10.3	4.5	102	11.6	2
Political Science	2	.7		2	.2	22
Law				4	.5	16.5
Elementary and Early Childhood Education	47	15.7	2	201	22.9	1
Educational Psychology	33	11.0	3	40	4.6	8
Education (General)	58	19.3	1	76	8.6	6
Music				3	.3	19
Art	1	.3	15	15	1.7	11
Language/Linguistics	7	2.3	11	13	1.5	13
Literature	27	9.0	6	13	1.5	13
Science (General)	1	.3	15	3	.3	19
Mathematics				2	.2	22
Physics				1	.1	24.5
Natural History/ Biology	1	.3	15	2	.2	22
Zoology				3	.3	19
Developmental Child Psychology	31	10.3	4.5	98	11.1	3
Medicine	13	4.3	8.5	93	10.6	4
Technology						
Engineering				13	1.5	13.5
Home Economics	13	4.3	8.5	87	9.9	5
Bibliography/ Library Science	6	2.0	12.5	9	1.0	15

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Table 65. Orientation Discipline Dispersion by Major Publication Formats

n = 3,179

Discipline	Research Orientation				
	Journals (51.4%)	Books/ Monographs (24.8%)	Part of Collected Works (11.7%)	Reports (3.3%)	Other (8.8%)
	%	%	%	%	%
Developmental Child Psychology	12.9	4.3	3.6	.1	2.1
Psychology	9.1	4.5	1.9	.1	1.2
Sociology	6.9	4.5	1.9	.5	1.1
Medicine	6.4	1.4	1.6	.1	.5
Elementary and Early Childhood Education	1.2	2.2	.1	1.1	1.0
Education (General)	.3	1.6	.3	.4	.5
Home Economics	1.7	.3	0	.1	.6
Educational Psychology	5.6	.6	.4	.2	.6
Language/Linguistics	4.0	1.0	1.0	.1	.8
Business/Economics	.2	.9	0	0	0
Recreation	.1	.2	0	.5	.1

Table 65. (continued)

Discipline	Interpretation Orientation				
	Journals (45.5%)	Books/ Monographs (25.1%)	Part of Collected Works (14.2%)	Reports (6.4%)	Other (8.8%)
	%	%	%	%	%
Developmental Child Psychology	5.1	3.4	1.7	.1	1.7
Psychology	5.5	4.3	2.8	.1	.5
Sociology	4.9	5.0	1.5	1.4	.9
Medicine	8.1	1.6	2.9	.7	.9
Elementary and Early Childhood Education	1.7	2.4	1.2	.6	.6
Education (General)	2.9	2.2	.5	.3	.9
Home Economics	5.3	.8	.8	1.5	.9
Educational Psychology	6.0	.9	.4	.7	1.5
Language/Linguistics	1.0	.8	.6	0	.2
Business/Economics	.3	1.0	.4	.6	0
Recreation	0	.2	.1	.2	.3

Table 65. (continued)

Discipline	Practice Orientation				
	Journals (23.2%)	Books/ Monographs (50.7%)	Part of Collected Works (6.1%)	Reports (12.0%)	Other (7.9%)
	%	%	%	%	%
Developmental Child Psychology	3.2	5.4	1.1	.1	1.1
Psychology	1.6	1.9	.3	0	.1
Sociology	2.5	6.4	.6	1.3	.4
Medicine	2.5	3.1	1.0	1.9	.6
Elementary and Early Childhood Education	3.6	12.8	.8	2.8	.9
Education (General)	2.9	5.3	.5	1.8	.8
Home Economics	2.0	4.3	.4	1.2	.6
Educational Psychology	2.2	2.1	.1	.7	1.1
Language/Linguistics	.5	.4	.4	.1	.3
Business/Economics	1.6	.7	.3	.6	.8
Recreation	.2	1.0	0	.5	.6

Table 66. CIJE and RIE Discipline Dispersion by Major Publication Formats

n = 3,179

	CIJE				
Discipline	Journals (49.6%)	Books/ Monographs (26.6%)	Part of Collected Works (13.0%)	Reports (2.4%)	Other (8.3%)
	%	%	%	%	%
Developmental Child Psychology	9.6	3.4	3.1	.1	2.1
Psychology	8.2	4.3	2.5	.1	.9
Sociology	5.7	4.8	1.8	.8	1.0
Medicine	5.9	1.7	1.6	.3	.4
Elementary and Early Childhood Education	1.8	2.2	.3	.2	.3
Education (General)	2.0	2.1	.7	.4	.8
Home Economics	1.9	.5	.3	.2	.6
Educational Psychology	7.0	1.0	.4	.3	1.5
Language/Linguistics	2.5	.8	.8	.1	.4
Business/Economics	.1	.8	0	0	0
Recreation	.1	.4	0	.1	0

Table 66. (continued)

Discipline	RIE				
	Journals (28.9%)	Books/ Monographs (42.2%)	Part of Collected Works (7.9%)	Reports (12.5%)	Other (8.5%)
	%	%	%	%	%
Developmental Child Psychology	4.2	5.4	1.1	.1	1.1
Psychology	2.2	2.6	.7	0	.2
Sociology	3.6	5.9	.8	1.4	.6
Medicine	5.1	2.4	2.0	1.6	.9
Elementary and Early Childhood Education	2.7	10.1	1.1	2.9	1.4
Education (General)	2.1	4.0	.2	1.4	.7
Home Economics	3.9	3.4	.6	1.7	.7
Educational Psychology	2.0	1.6	.1	.8	.6
Language/Linguistics	1.0	.7	.5	.1	.4
Business/Economics	1.4	.9	.5	.8	.6
Recreation	.1	.6	.1	.7	.7

Table 67. Research Orientation
Discipline Dispersion by Major Publication Formats

n = 1,000

	CIJE				
Discipline	Journals (56.7%)	Books/ Monographs (21.7%)	Part of Collected Works (13.5%)	Reports (1.3%)	Other (6.8%)
	%	%	%	%	%
Developmental Child Psychology	15.4	3.8	4.5	0	2.2
Psychology	10.4	4.0	2.1	.1	1.1
Sociology	7.9	4.2	2.5	.7	1.1
Medicine	6.5	1.8	1.8	0	.3
Elementary and Early Childhood Education	0	1.1	.1	0	0
Education (General)	.1	.4	.3	0	.1
Home Economics	1.9	.4	0	0	.4
Educational Psychology	6.3	.7	.4	.1	.7
Language/Linguistics	4.2	.8	.6	.1	.7
Business/Economics	0	.7	0	0	0
Recreation	0	0	0	0	0

Table 67. (continued)

Discipline	RIE				
	Journals (37.7%)	Books/ Monographs (32.7%)	Part of Collected Works (7.2%)	Reports (8.5%)	Other (13.9%)
	%	%	%	%	%
Developmental Child Psychology	6.4	5.7	1.4	.4	1.8
Psychology	5.7	5.7	1.4	0	1.4
Sociology	4.3	5.3	.4	0	1.0
Medicine	6.0	.4	1.1	.4	1.1
Elementary and Early Childhood Education	4.3	5.0	0	3.0	3.6
Education (General)	.7	4.6	.4	1.4	1.4
Home Economics	1.1	0	0	.4	1.1
Educational Psychology	3.9	.4	.4	.4	.4
Language/Linguistics	3.6	1.4	2.1	0	1.1
Business/Economics	.7	1.4	0	0	0
Recreation	.4	.7	0	1.8	.4

Table 68. Interpretation Orientation
Discipline Dispersion by Major Publication Formats

n = 1,000

Discipline	CIJE				
	Journals (48.7%)	Books/ Monographs (22.9%)	Part of Collected Works (14.9%)	Reports (3.3%)	Other (10.2%)
	%	%	%	%	%
Developmental Child Psychology	5.6	2.4	2.4	.2	2.4
Psychology	8.5	5.8	4.2	.2	.9
Sociology	4.5	5.1	1.3	1.1	1.1
Medicine	6.9	1.8	2.0	.5	.9
Elementary and Early Childhood Education	.9	1.5	.5	.2	.5
Education (General)	2.0	1.6	.7	.4	1.1
Home Economics	1.8	.4	.5	.4	.9
Educational Psychology	9.1	.5	.5	.4	1.8
Language/Linguistics	1.6	.5	1.1	0	.2
Business/Economics	0	1.3	0	0	0
Recreation	0	0	0	0	0

Table 68. (continued)

Discipline	RIE				
	Journals (41.6%)	Books/ Monographs (27.8%)	Part of Collected Works (11.3%)	Reports (10.2%)	Other (7.1%)
	%	%	%	%	%
Developmental Child Psychology	4.4	4.7	.9	0	.9
Psychology	1.8	2.4	1.1	0	0
Sociology	5.3	4.9	1.8	1.8	.7
Medicine	9.6	1.3	4.0	.9	.9
Elementary and Early Childhood Education	2.7	3.6	2.0	1.1	.7
Education (General)	4.0	2.9	.2	.2	.7
Home Economics	9.6	1.3	1.1	2.9	.9
Educational Psychology	2.2	1.3	.2	1.1	1.1
Language/Linguistics	.2	1.1	0	0	.2
Business/Economics	.7	.7	.9	1.3	0
Recreation	0	.4	.2	.4	.7

Table 69. Practice Orientation
Discipline Dispersion by Major Publication Formats

n = 1,179

	CIJE				
Discipline	Journals (34.0%)	Books/ Monographs (45.3%)	Part of Collected Works (8.3%)	Reports (3.7%)	Other (8.7%)
	%	%	%	%	%
Developmental Child Psychology	3.0	4.7	1.3	0	1.3
Psychology	2.3	2.3	.3	0	.3
Sociology	2.7	6.0	1.0	.3	.3
Medicine	2.3	1.3	.3	.3	0
Elementary and Early Childhood Education	8.0	6.0	.3	.7	.7
Education (General)	6.7	8.0	1.7	1.3	1.7
Home Economics	2.0	1.0	.3	.3	.7
Educational Psychology	5.0	2.3	.3	.3	3.0
Language/Linguistics	.3	1.0	1.0	0	0
Business/Economics	.3	0	0	0	0
Recreation	.3	0	0	.3	0

Table 69. (continued)

Discipline	RIE				
	Journals (19.6%)	Books/ Monographs (52.6%)	Part of Collected Works (5.3%)	Reports (14.9%)	Other (7.6%)
	%	%	%	%	%
Developmental Child Psychology	3.3	5.7	1.0	3.3	1.0
Psychology	1.4	1.7	.2	0	0
Sociology	2.5	6.6	.5	1.6	.5
Medicine	2.5	3.6	1.3	2.4	.8
Elementary and Early Childhood Education	2.2	15.1	1.0	3.5	1.0
Education (General)	1.6	4.4	.1	1.9	.6
Home Economics	1.9	5.5	.5	1.5	.6
Educational Psychology	1.3	2.0	0	.8	.5
Language/Linguistics	.6	.2	.2	.1	.3
Business/Economics	2.0	.9	.5	.8	1.0
Recreation	.1	.7	0	.6	.8

Table 70. Discipline Dispersion of Citations

n = 3,179

Discipline	Format					Total # of Citations	% of Total Citations
	Reports	Books/ Monographs	Collected Works	Journals	Others		
General Works		1	1	1		3	0.1
Philosophy	1	18	9	11	2	41	1.3
Psychology	2	110	50	165	18	345	10.9
History		5				5	0.2
Anthropology	1	10	2	1		14	0.4
Recreation	13	16	1	3	11	44	1.4
Social Science		1	3			4	0.1
Business/Economics	13	27	8	24	9	81	2.5
Sociology	34	171	41	148	25	419	13.2
Political Science	1	5	1	4	1	12	0.4
Law	1	4	1	7	2	15	0.5
Elementary and Early Childhood Education	50	197	23	72	27	369	11.6
Educational Psychology	17	40	9	142	34	242	7.6
Education (General)	23	101	14	66	29	233	7.3
Music		4				4	0.1
Art	2	17	1	1	3	24	0.8
Language/Linguistics	2	23	21	56	13	115	3.6
Literature		36	4	2	1	43	1.4
Science (General)		8				8	0.3
Mathematics		8		13		21	0.7
Physics		1				1	0.0
Natural History/ Biology	1	2		18		21	0.7
Zoology		4	5	19	1	29	0.9
Developmental Child Psychology	3	141	66	218	51	479	15.1
Medicine	30	66	57	174	21	348	10.9
Technology		2			1	3	0.1
Engineering	10	6		1		17	0.5
Home Economics	30	62	13	93	22	220	6.9
Bibliography/ Library Science		11	1	4	3	19	0.6
Total Number of Citations	234	1,097	331	1,243	274	3,179	
% of Total Citations	7.4	34.5	10.4	39.1	8.6		100.0

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Table 71. Discipline Dispersion in Journal Citations by Orientations

n = 1,243

Discipline	Orientation					
	Research		Interpretation		Practice	
	Number of Citations	%	Number of Citations	%	Number of Citations	%
Developmental Child Psychology	129	25.1	51	11.2	38	13.9
Sociology	69	13.4	49	10.8	30	10.9
Elementary and Early Childhood Education	12	2.3	17	3.7	43	15.7
Medicine	64	12.5	81	17.8	29	10.6
Psychology	91	17.7	55	12.1	19	6.9
Educational Psychology	56	10.9	60	13.2	26	9.5
Education (General)	3	0.6	29	6.4	34	12.4
Home Economics	17	3.3	53	11.6	23	8.4
Language/Linguistics	40	7.8	10	2.2	6	2.2
Business/Economics	2	0.4	3	0.7	19	6.9
Recreation	1	0.2			2	0.7
Literature					2	0.7
Philosophy	2	0.4	9	2.0		
Zoology	6	1.2	13	2.9		
Art	1	0.2				
Mathematics	13	2.5				
Natural History/ Biology	4	0.8	13	2.9	1	0.4
Bibliography/ Library Science	1	0.2	1	0.2	2	0.7
Engineering	1	0.2				
Law	1	0.2	6	1.3		
Anthropology	1	0.2				
Political Science			4	0.9		
Science (General)						
History						
Social Science (General)						
Music						
General Works			1	0.2		
Technology (General)						
Physics						

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Table 72. Discipline Dispersion in Journal Citations by CIJE and RIE Files

n = 1,243

	File			
	CIJE		RIE	
Discipline	Number of Citations	%	Number of Citations	%
Developmental Child Psychology	151	19.4	67	14.4
Sociology	90	11.6	58	12.5
Elementary and Early Childhood Education	29	3.7	43	9.2
Medicine	92	11.8	82	17.6
Psychology	129	16.6	36	7.7
Educational Psychology	110	14.1	32	6.9
Education (General)	32	4.1	34	7.3
Home Economics	30	3.9	63	13.5
Language/Linguistics	40	5.1	16	3.4
Business/Economics	1	0.1	23	4.9
Recreation	1	0.1	2	0.4
Literature	1	0.1	1	0.2
Philosophy	10	1.3	1	0.2
Zoology	17	2.2	2	0.4
Art	1	0.1		
Mathematics	12	1.5	1	0.2
Natural History/ Biology	17	2.2	1	0.2
Bibliography/ Library Science	3	0.4	1	0.2
Engineering	1	0.1		
Law	5	0.6	2	0.4
Anthropology	1	0.1		
Political Science	4	0.5		
Science (General)				
History				
Social Science (General)				
Music				
General Works	1	0.1		
Technology (General)				
Physics				

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Table 73. Discipline Dispersion in Journal Citations: Research Orientation

n = 510

Discipline	File			
	CIJE		RIE	
	Number of Citations	%	Number of Citations	%
Developmental Child Psychology	111	27.2	18	17.0
Sociology	57	14.0	12	11.3
Elementary and Early Childhood Education			12	11.3
Medicine	47	11.5	17	16.0
Psychology	75	18.4	16	15.1
Educational Psychology	45	11.0	11	10.4
Education (General)	1	0.2	2	1.9
Home Economics	14	3.4	3	2.8
Language/Linguistics	30	7.4	10	9.4
Business/Economics			2	1.9
Recreation			1	0.9
Literature				
Philosophy	2	0.5		
Zoology	6	1.5		
Art	1	0.2		
Mathematics	12	2.9	1	0.9
Natural History/ Biology	4	1.0		
Bibliography/ Library Science			1	0.9
Engineering	1	0.2		
Law	1	0.2		
Anthropology	1	0.2		
Political Science				
Science (General)				
History				
Social Science (General)				
Music				
General Works				
Technology (General)				
Physics				

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Table 74. Discipline Dispersion in Journal Citations: Interpretation Orientation

n = 455

	File			
	CIJE		RIE	
Discipline	Number of Citations	%	Number of Citations	%
Developmental Child Psychology	31	11.6	20	10.7
Sociology	25	9.3	24	12.8
Elementary and Early Childhood Education	5	1.9	12	6.4
Medicine	38	14.2	43	23.0
Psychology	47	17.5	8	4.3
Educational Psychology	50	18.7	10	5.3
Education (General)	11	4.1	18	9.6
Home Economics	10	3.7	43	23.0
Language/Linguistics	9	3.4	1	0.5
Business/Economics			3	1.6
Recreation				
Literature				
Philosophy	8	3.0	1	0.5
Zoology	11	4.1	2	1.1
Art				
Mathematics				
Natural History/ Biology	13	4.9		
Bibliography/ Library Science	1	0.4		
Engineering				
Law	4	1.5	2	1.1
Anthropology				
Political Science	4	1.5		
Science (General)				
History				
Social Science (General)				
Music				
General Works	1	0.4		
Technology (General)				
Physics				

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Table 75. Discipline Dispersion in Journal Citations: Practice Orientation

n = 274

	File			
	CIJE		RIE	
Discipline	Number of Citations	%	Number of Citations	%
Developmental Child Psychology	9	8.8	29	16.9
Sociology	8	7.8	22	12.8
Elementary and Early Childhood Education	24	23.5	19	11.0
Medicine	7	6.9	22	12.8
Psychology	7	6.9	12	7.0
Educational Psychology	15	14.7	11	6.4
Education (General)	20	19.6	14	8.1
Home Economics	6	5.9	17	9.9
Language/Linguistics	1	1.0	5	2.9
Business/Economics	1	1.0	18	10.5
Recreation	1	1.0	1	0.6
Literature	1	1.0	1	0.6
Philosophy				
Zoology				
Art				
Mathematics				
Natural History/ Biology			1	0.6
Bibliography/ Library Science	2	2.0		
Engineering				
Law				
Anthropology				
Political Science				
Science (General)				
History				
Social Science (General)				
Music				
General Works				
Technology (General)				
Physics				

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Table 76. Most Frequently Cited Journal Titles

Journal Title	Number of Citations
ZONE I	
Child Development	136
Developmental Psychology	72
Journal of Experimental Child Psychology	27
American Psychologist	25
Journal of Personality and Social Psychology	23
Psychological Bulletin	23
Human Development	21
Journal of Educational Psychology	21
Psychological Review	20
Child Care Quarterly	19
ZONE II	
American Journal of Orthopsychiatry	18
Gifted Child Quarterly	16
Pediatrics	15
Elementary School Journal	14
Journal of Genetic Psychology	13
Journal of Child Psychology and Psychiatry and Allied Disciplines	11
Child Welfare	10
Merrill-Palmer Quarterly	10

Table 76. (continued)

Journal Title	Number of Citations
ZONE II	
Young Children	10
Family Economics Review	10
Journal of Child Language	10
Journal of Experimental Psychology	10
Journal of Nutrition Education	9
American Journal of Obstetrics and Gynecology	8
American Journal of Psychiatry	8
Science	8
Childhood Education	7
International Journal of Psycho-Analysis	7
Journal of Abnormal and Social Psychology	7
Journal of Learning Disabilities	7
American Journal of Clinical Nutrition	6
Genetic Psychology Monographs	6
Journal of Educational Research	6
Journal of Marriage and the Family	6
Psychology Today	6
Children Today	5
Cognitive Psychology	5

Table 76. (continued)

Journal Title	Number of Citations
ZONE II	
Journal of Abnormal Psychology	5
Journal of Experimental Education	5
Journal of Social Issues	5
Journal of Social Psychology	5
Instructor	4
American Journal of Mental Deficiency	4
British Journal of Criminology	4
Child Psychiatry and Human Development	4
Criminology	4
Developmental Medicine and Child Neurology	4
Exceptional Children	4
IDA Consumer	4
Infant Behavior and Development	4
Journal of Abnormal Child Psychology	4
Journal of the American Medical Association	4
Journal of Clinical Psychology	4

Table 76. (continued)

Journal Title	Number of Citations
ZONE II	
Journal of Youth and Adolescence	4
Monthly Labor Review	4
Nature	4
New Horizons in Education	4
Pediatric Research	4
Perceptual and Motor Skills	4
Phi Delta Kappan	4
Population Bulletin	4
Psychoanalytic Study of the Child	4
Psychology Review	4
Psychophysiology	4
Social Casework	4
Social Work	4
Journal of Personality	4
Journal of the American Dietetic Association	4

Table 77. Most Frequently Cited Journal Titles by Orientation

n = 1,243

Research Orientation	Number of Citations
Child Development	90
Developmental Psychology	48
Journal of Personality and Social Psychology	22
Journal of Experimental Child Psychology	20
Psychological Bulletin	20
Psychological Review	11
Journal of Child Language	10
Journal of Experimental Psychology	9
Journal of Genetic Psychology	9
American Psychologist	8
Human Development	7
Journal of Child Psychology and Psychiatry and Allied Disciplines	7
Journal of Educational Psychology	7
Merrill-Palmer Quarterly	6
Journal of Abnormal and Social Psychology	6
American Journal of Obstetrics and Gynecology	5
Journal of Orthopsychiatry	4
Pediatrics	4
Journal of the American Medical Association	4
Journal of Personality	4
Journal of Youth and Adolescence	4
Psychoanalytic Study of the Child	4
Psychophysiology	4
citations to journals cited less than four times	205
Total Citations	514

Interpretation Orientation	Number of Citations
Child Development	22
Child Care Quarterly	19
Developmental Psychology	13
American Psychologist	13
Journal of Educational Psychology	12
Human Development	11
Journal of Nutrition Education	9
Pediatrics	9
American Journal of Orthopsychiatry	7
Psychological Review	7
Journal of Experimental Child Psychology	6
American Journal of Clinical Nutrition	6
Elementary School Journal	5
American Journal of Psychiatry	5
Child Welfare	4
Journal of Child Psychology and Psychiatry and Allied Disciplines	4
Criminology	4
International Journal of Psycho-Analysis	4
Journal of the American Dietetic Association	4
New Horizons in Education	4
citations to journals cited less than four times	287
Total Citations	455

Practice Orientation	Number of Citations
Child Development	24
Developmental Psychology	15
Gifted Child Quarterly	14
Family Economic Review	10
Elementary School Journal	8
American Joural of Orthopsychiatry	7
Young Children	6
Childhood Education	5
Instructor	4
American Psychologist	4
IDA Consumer	4
citations to journals less than four times	173
Total Citations	274

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Table 78. Most Frequently Cited Journal Titles by Files

n = 1,243

CLTE File

Journal Title	Number of Citations
Child Development	93
Developmental Psychology	50
Journal of Experimental Child Psychology	29
Psychological Bulletin	19
Human Development	19
Journal of Personality and Social Psychology	18
Psychological Review	18
Journal of Educational Psychology	17
Gifted Child Quarterly	16
American Psychologist	12
Journal of Genetic Psychology	10
Journal of Child Psychology and Psychiatry and Allied Disciplines	9
Journal of Experimental Psychology	8
Journal of Abnormal and Social Psychology	7
Child Welfare	7
Pediatrics	7
Elementary School Journal	6
American Journal of Orthopsychiatry	6
Merrill-Palmer Quarterly	5
Young Children	5
American Journal of Psychiatry	5
Journal of Child Language	5
Journal of Educational Research	5
Journal of Experimental Education	5
Journal of Social Psychology	5
Childhood Education	4
Children Today	4
American Journal of Mental Deficiency	4
Cognitive Psychology	4
Infant Behavior and Development	4
Journal of Abnormal Child Psychology	4
Journal of Personality	4
Journal of Youth and Adolescence	4
Psychoanalytic Study of the Child	4
Psychophysiology	4
Science	4
Social Work	4
Citations in journals cited less than four times	349
Total Citations	778

NIE File

Journal Title	Number of Citations
Child Development	43
Developmental Psychology	22
Child Care Quarterly	19
American Psychologist	13
American Journal of Orthopsychiatry	12
Family Economics Review	10
Journal of Nutrition Education	9
Elementary School Journal	8
Pediatrics	8
American Journal of Obstetrics and Gynecology	6
Young Children	5
Journal of Personality and Social Psychology	5
Merrill-Palmer Quarterly	5
American Journal of Clinical Nutrition	5
Journal of Child Language	5
Journal of Learning Disabilities	5
Psychology Today	5
Instructor	4
Psychological Bulletin	4
Criminology	4
FDA Consumer	4
Journal of the American Medical Association	4
Journal of Educational Psychology	4
Journal of Marriage and the Family	4
Journal of the American Dietetic Association	4
Monthly Labor Review	4
New Horizons in Education	4
Population Bulletin	4
Science	4
Citations in journals cited less than four times	232
Total Citations	469

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Table 79. Most Frequently Cited Journal Titles: Research Orientation

n = 514

CIJE File		RIE File	
Journal Title	Number of Citations	Journal Title	Number of Citations
Child Development	74	Child Development	16
Developmental Psychology	41	Journal of Personality and Social Psychology	5
Journal of Experimental Child Psychology	18	American Journal of Obstetrics and Gynecology	5
Journal of Personality and Social Psychology	17	Journal of Child Language	5
Psychological Bulletin	17	Journal of the American Medical Association	4
Psychological Review	10		
Journal of Experimental Psychology	8	Citations in journals cited less than four times	71
Journal of Child Psychology and Psychiatry and Allied Disciplines	7	Total Citations	106
Journal of Genetic Psychology	7		
Human Development	6		
Journal of Abnormal and Social Psychology	6		
American Psychologist	5		
Journal of Child Language	5		
Journal of Educational Psychology	5		
Merrill-Palmer Quarterly	4		
American Journal of Orthopsychiatry	4		
Journal of Personality	4		
Journal of Youth and Adolescence	4		
Psychoanalytic Study of the Child	4		
Psychophysiology	4		
Citations in journals cited less than four times	158		
Total Citations	408		

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Table 80. Most Frequently Cited Journal Titles: Interpretation Orientation

n = 455

CIJE File		RIE File	
Journal Title	Number of Citations	Journal Title	Number of Citations
Child Development	13	Child Care Quarterly	19
Journal of Educational Psychology	12	Child Development	9
Human Development	11	Journal of Nutrition Education	9
Developmental Psychology	7	American Psychologist	7
Journal of Experimental Psychology	6	Developmental Psychology	6
American Psychologist	6	American Journal of Clinical Nutrition	5
Psychological Review	6	American Journal of Orthopsychiatry	5
Pediatrics	4	Pediatrics	5
		Criminology	4
Citations in journals cited less than four times	203	Journal of the American Dietetic Association	4
		New Horizons in Education	4
Total Citations	268	Citations in journals cited less than four times	110
		Total Citations	187

Table 81. Most Frequently Cited Journal Titles: Practice Orientation

n = 274

CIJE File		RIE File	
Journal Title	Number of Citations	Journal Title	Number of Citations
Gifted Child Quarterly	14	Child Development	18
Child Development	6	Developmental Psychology	13
Young Children	4	Family Economics Review	10
		American Journal of Orthopsychiatry	7
Citations in journals cited less than four times	78	Elementary School Journal	5
		Instructor	4
		IDA Consumer	4
Total Citations	102		
		Citations in journals cited less than four times	111
		Total Citations	172

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Table 82. Journal to Journal Citations

(raw scores)
(n = 778)

Citing ERIC Journals	Journals Cited by ERIC Journals															Total Number of Citations	Percent of Total Citations
	Child Development	Child Welfare	Developmental Psychology	Elementary School Journal	Human Development	Journal of Child Psychology and Psychiatry and Allied Disciplines	Journal of Experimental Child Psychology	Journal of Personality and Social Psychology	Psychological Bulletin	Young Children	American Journal of Orthopsychiatry	Gifted Child Quarterly	Journal of Educational Psychology	Journal of Experimental Psychology	Psychological Review		
Child Development	39		18				10		5						9	225	28.5
Child Welfare		5														45	5.8
Developmental Psychology	5		8													38	4.9
Elementary School Journal													7			17	2.2
Human Development					15										4	57	7.3
Journal of Child Psychology and Psychiatry and Allied Disciplines						4										22	2.8
Journal of Experimental Child Psychology	16		5				4		5					4	4	71	9.1
Journal of Genetic Psychology	6		4													19	2.4
Journal of Personality and Social Psychology								8								17	2.2
Journal of Psychology	6															22	2.8
Psychological Bulletin	5															29	3.7
Young Children	5			4						4		14				98	12.6
Total Number of Citations	93	7	50	6	19	9	24	18	19	5	6	16	17	8	18	778	
Percent of Total Citations	12.0	0.9	6.4	0.8	2.4	1.2	3.1	2.3	2.4	0.6	0.8	2.1	2.2	1.0	2.3		

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APPENDIX B

CLASSIFICATION OF THE CITATION SAMPLE AND CODEBOOK

CLASSIFICATION OF THE CITATION SAMPLE

In order to classify the citation sample, a broadly conceived table that accommodates both the Library of Congress and the Dewey Classification systems was set up. Thirty-eight disciplines were identified, of which two were spinoffs of larger disciplines. These were developmental child psychology, a spinoff of psychology, and elementary and early childhood education, a spinoff of education. It seemed appropriate to identify these specifically, because the first figured very largely among the citations, and the second coincides with the home discipline, or that portion of educational literature that is acquired and entered in the ERIC database by its Clearinghouse on Elementary and Early Childhood Education. The table that accommodates the Library of Congress and Dewey classification systems and that was used to class a citation with a discipline is displayed in the Codebook in this Appendix.

For those documents that have been cataloged by the University of Illinois libraries on the Urbana-Champaign or Chicago Circle campus, classification codes were located through an online search of LCS. Because the Urbana-Champaign library uses both the 16th and 19th editions of the Dewey classification system, and the Chicago Circle campus library uses the Library of Congress classification system, the retrieved classification codes were assessed and compared to place each citation within the appropriate discipline. Every effort was made to achieve consistency by verifying, comparing, and checking. To facilitate this process, prior to coding disciplines, general container

codes were added to the data file to distinguish between documents that could possibly be classified by either of the above-mentioned libraries. Journal articles were classified by key words in the title, by in-context clues from the document that gave the citation, and, in cases in which the above procedures did not yield sufficient clues, the cited document was located and then classified.

For each document that was classified, a code of the method that yielded that classification was added. This is displayed in Table 83.

As a final check, the classification codes were recombined with the original alphanumeric file and sorted in an alphabetical order by author. The file was read again and checked for consistency of a given author's work as well as for consistency of title clues. In cases in which classification for a citation appeared outside logical sequence, effort was made to locate the reference and to reclassify it if necessary.

Table 83. Mode of Classification

n = 3,179

Discipline / Method Code-->	18.9% 1 %	3.9% 2 %	8.8% 3 %	56.7% 4 %	6.7% 5 %	Number of Citations
General Works	33.3		33.3	33.3		3
Philosophy	34.1	9.8	12.2	24.4	19.5	41
Psychology	22.3	7.2	13.9	47.8	8.7	345
History	80.0	20.0				5
Anthropology	28.6	35.7	14.3	14.3	7.1	14
Recreation	11.4	15.9	2.3	63.6	6.8	44
Social Science	25.0		50.0		25.0	4
Business/Economics	21.0	9.9	8.6	51.9	8.6	81
Sociology	21.2	13.4	8.8	47.3	9.3	419
Political Science	8.3	16.7	8.3	41.7	25.0	12
Law		20.0	6.7	66.7	6.7	15
Elementary and Early Childhood Education	25.5	16.0	5.4	48.5	4.6	369
Educational Psychology	4.5	5.4	2.9	80.2	7.0	242
Education (General)	21.0	13.3	4.3	57.1	4.3	233
Music	25.0	25.0		50.0		4
Art	16.7	50.0		12.5	20.8	24
Language/Linguistics	9.6	7.0	17.5	62.3	3.5	115
Literature	30.2	7.0	7.0	53.5	2.3	43
Science (General)	37.5	50.0		12.5		8
Mathematics	23.8	9.5		28.6	38.1	21
Physics	100.0					1
Natural History/ Biology		4.8		95.2		21
Zoology	6.9	6.9	13.8	65.5	6.9	29
Developmental Child Psychology	23.6	3.8	12.1	57.0	3.5	479
Medicine	12.1	3.2	12.6	69.0	3.2	348
Technology	66.7			33.3		3
Engineering	5.9		88.2		5.9	17
Home Economics	14.5	1.4	3.2	69.1	11.8	220
Bibliography/ Library Science	26.3	21.1	5.3	36.8	10.5	19

Method Codes:

1 - University of Illinois at Urbana-Champaign -- Correspondence Table

2 - University of Illinois at Chicago Circle -- Correspondence Table

3 - University of Illinois -- Title -- Context -- Correspondence Table

4 - Dewey Decimal Classification (19th ed.) -- Title -- Correspondence Table

5 - Dewey Decimal Classification (19th ed.) -- Context -- Correspondence Table

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CODEBOOK

	Code	Column
ERIC DOCUMENTS:		
ID Tag		1-4
Document orientation		5
Research orientation	1	
Interpretation orientation	2	
Practice orientation	3	
ERIC file		6
Journal (EJ)	1	
Fugitive (ED)	2	
Additional journal for practice orientation	3	
ERIC number (6-digit number assigned by ERIC)		7-12
Number of authors		13
1 author	1	
2 authors	2	
3 authors	3	
more than 3 authors	4	
corporate authorship	5	
no author	9	

CODEBOOK (continued)

	Code	Column
ERIC DOCUMENTS:		
Year of publication (last two digits of the publication date)		14-15
Publication/document type		
Pubtype 1 (3-digit ERIC code)		16-18
Pubtype 2 (3-digit ERIC code)		19-21
Pubtype 3 (3-digit ERIC code)		22-24
Total number of references in the document (up to three digits)		25-27
Length of document in page count (up to three digits)		28-30

CODEBOOK (continued)

	Code	Column
Journal code for CIJE Journal titles		31-32
RIE Document	00	
Adolescence	01	
American Journal of Education	02	
Australian Journal of Early Childhood	03	
Child Care Quarterly	04	
Child Development	05	
Child Study Journal	06	
Child Welfare	07	
Childhood Education	08	
Children Today	09	
Day Care and Early Education	10	
Developmental Psychology	11	
Early Child Development and Care	12	
Elementary School Journal	13	
Elements: Translating Theory into Practice	14	
Human Development	15	
Instructor	16	
International Journal of Behavioral Development	17	
International Journal of Early Childhood	18	
Journal of Applied Developmental Psychology	19	
Journal of Child Psychology and Psychiatry and Allied Disciplines	20	
Journal of Experimental Child Psychology	21	

CODEBOOK (continued)

	Code	Column
Journal code for CIJE Journal titles		31-32
Journal of Genetic Psychology	22	
Journal of Personality and Social Psychology	23	
Journal of Psychology	24	
Merrill-Palmer Quarterly	25	
Monographs of the Society for Research in Child Development	26	
Probe	27	
Psychological Bulletin	28	
School Review	29	
Young Children	30	

CODEBOOK (continued)

	Code	Column
Referenced Works:		
Number of authors		33
1 author	1	
2 authors	2	
3 authors	3	
more than 3 authors	4	
Corporate authorship	5	
No author	6	
Computed age of reference (in years)		34-35
No references	99	

CODEBOOK (continued)

	Code	Column
Publication format		36-37
Dissertation	01	
Thesis	02	
Report	03	
Guide	04	
Legislative material	05	
Tests/evaluation material	06	
Book/monograph	.07	
Part of a collected work	08	
Not identified	.09	
Conference proceeding	10	
Journal article	11	
Audio-visual material	12	
Speech/conference paper	13	
Personal communication	14	
ERIC document	15	
Other database document	16	
Serial (other than journal)	17	
Newspaper article	18	
Unpublished manuscript	19	
Nonreferenced document	99	

CODEBOOK (continued)

	Code	Column
Container Code		38
Journal	1	
Monograph or container for part of a collected work	2	
Reports or other material usually not classified	3	
Nonreferenced work	9	
Reference Journal codes		39-40
(See journal codes: column 31-32)	01-30	
American Journal of Clinical Nutrition	31	
American Journal of Mental Deficiency	32	
American Journal of Obstetrics and Gynecology	33	
American Journal of Orthopsychiatry	34	
American Journal of Psychiatry	35	
American Psychologist	36	
British Journal of Criminology	37	
Child Psychiatry and Human Development	38	
Cognitive Psychology	39	
Criminology	40	
Developmental Medicine and Child Neurology	41	
Exceptional Children	42	
Family Economics Review	43	
IDA Consumer	44	

CODEBOOK (continued)

	Code	Column
Reference Journal Codes		39-40
Genetic Psychology Monographs	45	
Gifted Child Quarterly	46	
Infant Behavior and Development	47	
International Journal of Psycho-Analysis	48	
Journal of Abnormal and Social Psychology	49	
Journal of Abnormal Child Psychology	50	
Journal of Abnormal Psychology	51	
Journal of the American Medical Association	52	
Journal of Child Language	53	
Journal of Clinical Psychology	54	
Journal of Educational Psychology	55	
Journal of Educational Research	56	
Journal of Experimental Education	57	
Journal of Experimental Psychology	58	
Journal of Learning Disabilities	59	
Journal of Marriage and the Family	60	
Journal of Nutrition Education	61	
Journal of Personality	62	
Journal of Social Issues	63	
Journal of Social Psychology	64	
Journal of the American Dietetic Association	65	

CODEBOOK (continued)

	Code	Column
Reference Journal Codes		39-40
Journal of Youth and Adolescence	66	
Monthly Labor Review	67	
Nature	68	
New Horizons in Education	69	
Pediatric Research	70	
Pediatrics	71	
Perceptual and Motor Skills	72	
Phi Delta Kappan	73	
Population Bulletin	74	
Psychoanalytic Study of the Child	75	
Psychological Review	76	
Psychology Today	78	
Psychophysiology	79	
Science	80	
Social Casework	81	
Social Work	82	
(Mentioned 3 or fewer times)	98	
Not a journal	99	

CODEBOOK (continued)

	Code	Column
Discipline Codes and Corresponding Library of Congress and Dewey Classifications		41-42

Subject area/ Discipline	Library of Congress	Dewey	
General works	A-AZ	000-009;030-069 080-099	01
Philosophy	B-BD;BJ	100-129;140-149 160-199	02
Psychology	BF(not covered by Code 16 and 31)	130-139;150-159 (not covered by Code 31)	03
Religion	BL-BX	200-299	04
History	C-F	900-909;930-999	05
Geography	G-GF	910-919	06
Anthropology	GN-GT	390-399;573	07
Recreation	GV	790-799	08
Biography	CT	920-929	09
Social Sciences (General)	H	300	10
Business/ Economics	HA-HJ	330-339;380-389 650-659	11
Sociology	HM-HX	301-319;360-369	12
Political Science	J-JX	320-329;350-359	13
Law	K-KFZ	340-349	14

CODEBOOK (continued)

			Code	Column
Discipline Codes and Corresponding Library of Congress and Dewey Classifications				41-42
Subject area/ Discipline	Library of Congress	Dewey		
Elementary and Early Childhood Education	LA 219,633, 693-694;LB 621-629,631-639;641-649, 775,1101-1499,1501-1547,1555-1601	371.1; 371.3; 371.5; 371.9; 372;375; 379.1; 379.3	15	
Educational Psychology	BF456,503; LB1051-1091, 1131	370.15-370.158; 370.18;371.25-371.29; 378.16-378.18	16	
Education (General)	L-LT (not covered by code 15 and 16)	370-379(not covered by code 15 and 16)	17	
Music	M-MT	780-789	18	
Art	N-NX;BH;TR	700-779	19	
Language Linguistics	P-PM	400-499	20	
Literature	PN-PZ	070-079;800-899	21	
Science (General)	Q	500-509	22	
Mathematics	QA	510-519	23	
Astronomy	QB	520-529	24	
Physics	QC	530-539	25	
Chemistry	QD	540-549	26	

CODEBOOK (continued)

	Code	Column
Discipline Codes and Corresponding Library of Congress and Dewey Classifications		41-42

Subject area/ Discipline	Library of Congress	Dewey	
Geology	QE	550-569	27
Natural History/ Biology	QH	570-572;574-579	28
Botany	QK	580-589	29
Zoology	QL-QR	590-599	30
Developmental Child Psychology	BF717-723, 724	136.152;152.5;153; 155.4-155.9; 158.24-158.25	31
Medicine	R-RZ	610-619	32
Agriculture	S-SK	630-639	33
Technology (General)	T	600-609	34
Engineering	TA-TS(exclusive of TR)	620-629;660-699	35
Home Economics	TT-TX	640-649	36
Bibliography/ Library Science	Z	010-029	38

Nonreferenced work 99

CODEBOOK (continued)

	Code	Column
Mode of Classification		43
University of Illinois at Urbana-Champaign Correspondence Table	1	
University of Illinois at Chicago Circle Correspondence Table	2	
University of Illinois - Title - Context - Correspondence Table	3	
Dewey Decimal Classification(19th edition) - Title - Context - Correspondence Table	4	
Dewey Decimal Classification(19th edition) - Context - Correspondence Table	5	
Non-Referenced work	9	
		80/1
ID TAG		1-4
First author (last name, first and middle initial)		5-18
Title of referenced work		19-80/2
ID TAG		1-4
FIRST EDITOR (last name, first and middle initial)		5-18
Container Title		19-61
Location in container (year, volume number, pagination)		62-80/3

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VITA

Ruta Bulderis Sani was born in Riga, Latvia on June 1, 1934. She immigrated to the United States with her family in 1951 where she attended the University of Michigan from 1952-1956. After graduation she worked as an elementary school teacher in Japan. Upon return to the United States, she attended University of California at Berkeley and obtained a masters degree in education.

From 1960-1969 she lived in Bologna, Italy where she taught English literature at an international highschool and began a career as a librarian with Johns Hopkins University, Center of International Studies in Bologna. A degree in library science from Western Michigan University was obtained in 1970 through a sporadic attendance during summer sessions. While working for this latter degree, she wrote a master's thesis on the antecedents of the West Indian novel which was published and used as one of the texts at the College of the Virgin Islands.

From 1969-1981 she lived in St. Thomas U. S. Virgin Islands and worked as a librarian and library supervisor of the St. Thomas/St. John school districts. In this latter capacity she worked with ESEA Title IV projects and supervised library and curriculum enrichment projects in private and public schools in the U.S. Virgin Islands. A deep interest in learning processes and information transfer brought her to the University of Illinois and a Ph.D. program in Education that allowed a further study of these fields.

R. B. Sani has been a recipient of a Bausch Lomb scholarship and the Regents Scholarship, University of Michigan. She is a member of Beta Phi Mu, Phi Delta Kappa, and Kappa Delta Pi.